



MICROCHIP

SiC Power Solutions

Lead Time Support Package, v3.0

Competitor Part Matrix:

- Schottky Diode Discretes
- MOSFET Discretes
- Power Modules

MARCH 1, 2022

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Cross References

SiC Schottky Diode Discretes

WOLFSPEED

Discrete SiC Schottky Diodes <i>Wolfspeed</i>		
Wolfspeed PN	Microchip Replacement(s)	Notes
C3D10060A	MSC010SDA070K	Same package and nominal current. Microchip has more VBR margin.
C3D08060A	MSC010SDA070K	Same package. Microchip has more VBR margin and higher nominal current.
C3D06060A	MSC010SDA070K	Same package. Microchip has more VBR margin and higher nominal current.
E3D30065D	MSC030SDA070BCT	Same package and nominal current. Microchip has more VBR margin.
C6D10065A	MSC010SDA070K	Same package and nominal current. Microchip has more VBR margin.
C6D08065A	MSC010SDA070K	Same package. Microchip has more VBR margin and higher nominal current.
C6D06065A	MSC010SDA070K	Same package. Microchip has more VBR margin and higher nominal current.
C3D30065D	MSC030SDA070BCT	Same package and nominal current. Microchip has more VBR margin.
C3D10065A	MSC010SDA070K	Same package and nominal current. Microchip has more VBR margin.
C3D08065A	MSC010SDA070K	Same package. Microchip has more VBR margin and higher nominal current.
C3D06065A	MSC010SDA070K	Same package. Microchip has more VBR margin and higher nominal current.
E4D20120A	MSC020SDA120K	Exact
E4D20120D	MSC030SDA120B	Same package and VBR. Microchip has higher nominal current.
E4D10120A	MSC010DA120K	Exact
C4D40120D	MSC030SDA120BCT	Same package and VBR. Engineering should review current ratings.
C4D30120D	MSC030SDA120BCT	Exact
C4D20120H	MSC020SDA120B MSC030SDA120B	Same VBR. Microchip offers 20 A and 30 A options. TO-247-3L vs. 2L.
C4D20120A	MSC030SDA120K MSC020SDA120K	Same package and VBR. Microchip offers 20 A and 30 A options.
C4D15120H	MSC015SDA120B MSC020SDA120B	Same VBR. Microchip offers 15 A and 20 A options. TO-247-3L vs. 2L.
C4D15120A	MSC015SDA120K	Exact
C4D10120H	MSC010SDA120B MSC015SDA120B	Same VBR. Microchip offers 15 A and 20 A options. TO-247-3L vs. 2L.
C4D10120A	MSC010SDA120K	Exact
C4D08120A	MSC010SDA120K	Same package and VBR. Microchip has higher nominal current.

These are suggested replacements and should be reviewed by engineering.

SiC MOSFET Die and/or Discretes

WOLFSPEED

Discrete SiC MOSFETs Wolfspeed		
Wolfspeed PN	Microchip Replacement(s)	Notes
C3M0025065D	MSC015SMA070B	Same package but Microchip offers more VBR margin. RDSon roughly equal at VGS = 18 V.
C3M0045065D	MSC035SMA070B	Same package but Microchip offers more VBR margin. RDSon roughly equal at VGS = 18 V.
C3M0045065K	MSC035SMA070B4	Same package but Microchip offers more VBR margin. RDSon roughly equal at VGS = 18 V.
C3M0120065D	MSC090SMA070B	Same package but Microchip offers more VBR margin. RDSon roughly equal at VGS = 18 V.
C3M0120065K	MSC090SMA070B4	Same package but Microchip offers more VBR margin. RDSon roughly equal at VGS = 18 V.
C3M0025065K	MSC015SMA070B4	Same package but Microchip offers more VBR margin. RDSon roughly equal at VGS = 18 V.
C3M0060065K	MSC060SMA070B4	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
C3M0060065D	MSC060SMA070B	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
C3M0015065K	MSC015SMA070B4	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
C3M0015065D	MSC015SMA070B	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
E3M0280090D	MSC280SMA120B	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
C3M0120090D	MSC080SMA120B	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
C3M0120090D	MSC080SMA120B	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
C3M0065090D	MSC040SMA120B	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
E3M0065090D	MSC040SMA120B	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
C3M0030090K	MSC025SMA120B4	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
C3M0120100K	MSC080SMA120B4	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
C3M0065100K	MSC040SMA120B4	Same package but Microchip offers more VBR margin. RDSon roughly equal with VGS = 20 V.
E3M0075120D	MSC080SMA120B	Same package and VBR. RDSon roughly equal with VGS = 20 V.
E3M0075120K	MSC080SMA120B4	Same package and VBR. RDSon roughly equal with VGS = 20 V.
C3M0040120D	MSC040SMA120B	Same package and VBR. RDSon roughly equal with VGS = 20 V.
C3M0040120K	MSC040SMA120B4	Same package and VBR. RDSon roughly equal with VGS = 20 V.
C3M0350120D	MSC280SMA120B	Same package and VBR. RDSon roughly equal at VGS = 18 V.
C3M0075120K	MSC080SMA120B4	Same package and VBR. RDSon roughly equal with VGS = 20 V.
C3M0075120D	MSC080SMA120B	Same package and VBR. RDSon roughly equal with VGS = 20 V.
C3M0032120K	MSC025SMA120B4	Same package and VBR. RDSon roughly equal at VGS = 18 V.
C3M0032120D	MSC025SMA120B	Same package and VBR. RDSon roughly equal at VGS = 18 V.
C3M0021120K	MSC025SMA120B4	Same package and VBR. RDSon roughly equal with VGS = 20 V.
C3M0021120D	MSC025SMA120B	Same package, similar headline ratings. Engineering should review datasheets.
C3M0016120D	MSC017SMA120B	Same package, similar headline ratings. Engineering should review datasheets.
C3M0016120K	MSC017SMA120B4	Same package, similar headline ratings. Engineering should review datasheets.
C2M0280120D	MSC280SMA120B	Same package and headline ratings. Engineering should review datasheets.
C2M0080120D	MSC080SMA120B	Same package and headline ratings. Engineering should review datasheets.
C2M0040120D	MSC040SMA120B	Same package and headline ratings. Engineering should review datasheets.
C2M0025120D	MSC025SMA120B	Same package and headline ratings. Engineering should review datasheets.
C2M1000170D	MSC750SMA170B	Same package. RDSon roughly equal at VGS = 18 V.
C2M0080170P	MSC080SMA120B4	Competitor uses notched package for creepage.
C2M0045170P	MSC035SMA170B4	Competitor uses notched package for creepage.
C2M0045170D	MSC035SMA170B	Same package. RDSon roughly equal at VGS = 18 V.
CMF20120D	MSC080SMA120B	Same package and headline ratings. Engineering should review datasheets.
CPM3-0650-0015A	MSC015SMA070D/S	RDSon roughly equal with VGS = 20 V.
CPM3-0900-0030A	MSC025SMA120D/S	RDSon roughly equal at VGS = 18 V.
CPM3-0900-0065A	MSC040SMA120D/S	RDSon roughly equal at VGS = 18 V.
CPM3-1200-0021A	MSC017SMA120D/S	RDSon roughly equal at VGS = 18 V.
CPM3-1200-0075A	MSC080SMA120D/S	RDSon roughly equal with VGS = 20 V.
CPM3-1200-0016A	MSC017SMA120D/S	RDSon roughly equal with VGS = 20 V.
CPM3-1200-0032A	MSC025SMA120D/S	RDSon roughly equal at VGS = 18 V.
CPM2-1200-0025A	MSC025SMA120D/S	Same VBR. Engineering should review datasheets and drawings.
CPM2-1200-0040A	MSC040SMA120D/S	Same VBR. Engineering should review datasheets and drawings.
CPM2-1200-0080A	MSC080SMA120D/S	Same VBR. Engineering should review datasheets and drawings.
CPM2-1700-0045A	MSC035SMA170D/S	Same VBR. Engineering should review datasheets and drawings.

These are suggested replacements and should be reviewed by engineering.

ON SEMI

SiC MOSFET Die and Discretes ON Semi		
ON Semi PN	Microchip Replacement(s)	Notes
NTHL015N065SC1	MSC015SMA070B	RDson equivalent but requires higher VGson.
NVHL015N065SC1	MSC015SMA070B	RDson equivalent but requires higher VGson. Not AEC-Q.
NTH4L015N065SC1	MSC015SMA070B4	RDson equivalent but requires higher VGson.
NVH4L015N065SC1	MSC015SMA070B4	RDson equivalent but requires higher VGson. Not AEC-Q.
NTBG015N065SC1	-	Equivalent package available in Q4CY21.
NVBG015N065SC1	-	Equivalent package available in Q4CY21.
NTHL045N065SC1	MSC035SMA070B	RDson equivalent but requires higher VGson.
NVHL045N065SC1	MSC035SMA070B	RDson equivalent but requires higher VGson. Not AEC-Q.
NTH4L045N065SC1	MSC035SMA070B4	RDson equivalent but requires higher VGson.
NVH4L045N065SC1	MSC035SMA070B4	RDson equivalent but requires higher VGson. Not AEC-Q.
NVBG045N065SC1	-	Equivalent package available in Q4CY21.
NTBG045N065SC1	-	Equivalent package available in Q4CY21.
NTHL020N090SC1	MSC017SMA120B	Higher VBR. RDson equivalent but requires higher VGson.
NVHL020N090SC1	MSC017SMA120B	Higher VBR. RDson equivalent but requires higher VGson. Not AEC-Q.
NTH4L020N090SC1	MSC017SMA120B4	Higher VBR. RDson equivalent but requires higher VGson.
NVH4L020N090SC1	MSC017SMA120B4	Higher VBR. RDson equivalent but requires higher VGson. Not AEC-Q.
NTBG020N090SC1	-	Equivalent package available in Q4CY21.
NVBG020N090SC1	-	Equivalent package available in Q4CY21.
NTHL060N090SC1	MSC040SMA120B	Higher VBR. RDson equivalent but requires higher VGson.
NVHL060N090SC1	MSC040SMA120B	Higher VBR. RDson equivalent but requires higher VGson. Not AEC-Q.
NTH4L060N090SC1	MSC040SMA120B4	Higher VBR. RDson equivalent but requires higher VGson.
NVH4L060N090SC1	MSC040SMA120B4	Higher VBR. RDson equivalent but requires higher VGson. Not AEC-Q.
NTBG060N090SC1	-	Equivalent package available in Q4CY21.
NVBG060N090SC1	-	Equivalent package available in Q4CY21.
NTHL020N120SC1	MSC017SMA120B	Equivalent or superior performance.
NVHL020N120SC1	MSC017SMA120B	Equivalent or superior performance. Not AEC-Q.
NTH4L020N120SC1	MSC017SMA120B4	Equivalent or superior performance.
NVH4L020N120SC1	MSC017SMA120B4	Equivalent or superior performance. Not AEC-Q.
NTBG020N120SC1	-	Equivalent package available in Q4CY21.
NVBG020N120SC1	-	Equivalent package available in Q4CY21.
NTC020N120SC1	MSC017SMA120D/S	Equivalent or superior performance.
NVC020N120SC1	MSC017SMA120D/S	Equivalent or superior performance. Not AEC-Q.
NTHL040N120SC1	MSC040SMA120B	Same package and headline ratings.
NVHL040N120SC1	MSC040SMA120B	Same package and headline ratings. Not AEC-Q.
NTH4L040N120SC1	MSC040SMA120B4	Same package and headline ratings.
NVH4L040N120SC1	MSC040SMA120B4	Same package and headline ratings. Not AEC-Q.
NTBG040N120SC1	-	Equivalent package available in Q4CY21.
NVBG040N120SC1	-	Equivalent package available in Q4CY21.
NTC040N120SC1	MSC040SMA120D_S	Same headline ratings.
NVC040N120SC1	MSC040SMA120D_S	Same headline ratings. Not AEC-Q.
NTHL080N120SC1A	MSC080SMA120B	Same package and headline ratings.
NVHL080N120SC1A	MSC080SMA120B	Same package and headline ratings. Not AEC-Q.
NTH4L080N120SC1	MSC080SMA120B4	Same package and headline ratings.
NVH4L080N120SC1	MSC080SMA120B4	Same package and headline ratings. Not AEC-Q.
NTBG080N120SC1	-	Equivalent package available in Q4CY21.
NVBG080N120SC1	-	Equivalent package available in Q4CY21.
NTC080N120SC1	MSC080SMA120D/S	Same headline ratings.
NVC080N120SC1	MSC080SMA120D/S	Same headline ratings. Not AEC-Q.

These are suggested replacements and should be reviewed by engineering.

INFINEON

SiC MOSFET Die and Discretes INFINEON		
Infineon PN	Microchip Replacement(s)	Notes
IMBG120R030M1H	No Equiv Pkg	
IMW120R030M1H	MSC025SMA120B	20V gate drive may be required.
IMZ120R030M1H	MSC025SMA120B4	20V gate drive may be required.
AIMW120R035M1H	MSC025SMA120B	20V gate drive may be required. Not AECQ.
AIMW120R045M1	MSC025SMA120B4	15V drive OK. MSC040SMA120B4 with 20V gate drive. Not AECQ.
IMW120R045M1	MSC025SMA120B	15V drive OK. MSC040SMA120B with 20V gate drive.
IMZ120R045M1	MSC025SMA120B4	15V drive OK. MSC040SMA120B4 with 20V gate drive.
IMBG120R045M1H	No Equiv Pkg	
AIMW120R060M1H	MSC040SMA120B4	18V drive may be OK. Not AECQ.
IMBG120R060M1H	No Equiv Pkg	
IMW120R060M1H	MSC040SMA120B4	18V drive may be OK.
IMZ120R060M1H	MSC040SMA120B4	18V drive may be OK.
AIMW120R080M1	MS080SMA120B	20V gate drive may be required. Not AECQ.
IMBG120R090M1H	No Equiv Pkg	
IMW120R090M1H	MS080SMA120B	20V gate drive may be required.
IMZ120R090M1H	MS080SMA120B	20V gate drive may be required.
IMBG120R140M1H	No Equiv Pkg	
IMW120R140M1H	MSC080SMA120B	18V drive OK.
IMZ120R140M1H	MSC080SMA120B4	18V drive OK.
IMBG120R220M1H	No Equiv Pkg	
IMW120R220M1H	MSC180SMA120B	20V gate drive may be required.
IMZ120R220M1H	MSC180SMA120B4	20V gate drive may be req'd. We may not be packaging this die combo.
IMBG120R350M1H	No Equiv Pkg	
IMW120R350M1H	MSC180SMA120B	18V drive may be OK.
IMZ120R350M1H	MSC180SMA120B4	18V drive may be OK. We may not be packaging this die combo.
IMBF170R450M1	No Equiv Pkg	
IMBF170R650M1	No Equiv Pkg	
IMBF170R1K0M1	No Equiv Pkg	
IMW65R027M1H	MSC015SMA070B	18V drive OK.
IMZA65R027M1H	MSC015SMA070B4	18V drive OK.
IMZA65R048M1H	MSC035SMA070B4	20V gate drive may be required.
IMW65R048M1H	MSC035SMA070B	20V gate drive may be required.
IMW65R072M1H	MSC035SMA070B	18V drive OK.
IMZA65R072M1H	MSC035SMA070B4	18V drive OK.
IMW65R107M1H	MSC060SMA070B	18V drive OK.
IMZA65R107M1H	MSC060SMA070B4	18V drive OK.
These are suggested replacements and should be reviewed by engineering.		

ROHM

SiC MOSFET Die and Discretes ROHM		
Rohm PN	Microchip Replacement(s)	Notes
SCT3022KLHR	MSC017SMA120B	18V drive OK.
SCT3022KL	MSC017SMA120B	18V drive OK.
SCT3030KLHR	MSC025SMA120B	18V drive OK.
SCT3030KL	MSC025SMA120B	18V drive OK.
SCT3040KW7	No Equiv Pkg	
SCT3040KR	MSC040SMA120B4	20V drive may be needed.
SCT3040KLHR	MSC040SMA120B	20V drive may be needed.
SCT3040KL	MSC040SMA120B	20V drive may be needed.
SCT3080KW7	No Equiv Pkg	
SCT3080KR	MSC080SMA120B4	20V drive may be needed.
SCT3080KLHR	MSC080SMA120B	20V drive may be needed.
SCT3080KL	MSC080SMA120B	20V drive may be needed.
SCT2080KEHR	MSC080SMA120B	20V drive may be needed.
SCT2080KE	MSC080SMA120B	20V drive may be needed.
SCT3105KW7	No Equiv Pkg	
SCT3105KR	MSC080SMA120B4	20V drive may be needed.
SCT3105KLHR	MSC080SMA120B	20V drive may be needed.
SCT3105KL	MSC080SMA120B	20V drive may be needed.
SCT3160KW7	No Equiv Pkg	
SCT2160KEHR	MSC180SMA120B	20V drive required.
SCT2160KE	MSC180SMA120B	20V drive required.
SCT3160KL	MSC180SMA120B	20V drive required.
SCT2280KEHR	MSC180SMA120B	18V drive OK.
SCT2280KE	MSC180SMA120B	18V drive OK.
SCT2450KEHR	MSC360SMA120B	18V drive OK.
SCT2450KE	MSC360SMA120B	18V drive OK.
SCT2750NY	No Equiv Pkg	
SCT2H12NZ	No Equiv Pkg	
SCT2H12NY	No Equiv Pkg	
SCT3017ALHR	MSC015SMA070B	18V drive OK.
SCT3017AL	MSC015SMA070B	18V drive OK.
SCT3022ALHR	MSC015SMA070B	18V drive OK.
SCT3022AL	MSC015SMA070B	18V drive OK.
SCT3030AW7	No Equiv Pkg	
SCT3030AR	MSC015SMA070B4	18V drive OK.
SCT3030ALHR	MSC015SMA070B	18V drive OK.
SCT3030AL	MSC015SMA070B	18V drive OK.
SCT3060AW7	No Equiv Pkg	
SCT3060AR	MSC060SMA070B4	20V drive may be needed.
SCT3060ALHR	MSC060SMA070B	20V drive may be needed.
SCT3060AL	MSC060SMA070B	20V drive may be needed.
SCT3080AW7	No Equiv Pkg	
SCT3080AR	MSC090SMA070B4	20V drive may be needed.
SCT3080ALHR	MSC090SMA070B	20V drive may be needed.
SCT3080AL	MSC090SMA070B	20V drive may be needed.
SCT3120AW7	No Equiv Pkg	
SCT3120AL	MSC090SMA070S	18V drive OK.
These are suggested replacements and should be reviewed by engineering.		

ST MICRO

SiC MOSFET Die and Discretes ST MICRO		
ST Micro PN	Microchip Replacement(s)	Notes
SCTW90N65G2V	MSC015SMA070B	18V drive OK.
SCTH90N65G2V-7	No Equiv Pkg	
SCTL90N65G2V	No Equiv Pkg	
SCTWA90N65G2V	MSC015SMA070B	18V drive OK.
SCTWA90N65G2V-4	MSC015SMA070B4	18V drive OK.
SCTH100N65G2-7AG	No Equiv Pkg	
SCTW100N65G2AG	MSC015SMA070B	18V drive OK.
SCTW35N65G2VAG	MSC060SMA070B	May require a higher gate drive voltage
SCTWA35N65G2VAG	MSC060SMA070B	May require a higher gate drive voltage
SCTH35N65G2V-7	No Equiv Pkg	
SCTH35N65G2V-7AG	No Equiv Pkg	
SCTL35N65G2V	No Equiv Pkg	
SCTW35N65G2V	MSC060SMA070B	May require a higher gate drive voltage
SCTWA35N65G2V	MSC060SMA070B	May require a higher gate drive voltage
SCTWA35N65G2V-4	MSC060SMA070B4	
SCTW70N120G2V	MSC025SMA120B	May require a higher gate drive voltage
SCTH70N120G2V-7	No Equiv Pkg	
SCTWA70N120G2V-4	MSC025SMA120B4	May require a higher gate drive voltage
SCTW100N120G2AG	MSC025SMA120B	18V drive OK.
SCTWA60N120G2-4	MSC040SMA120B4	May require a higher gate drive voltage
SCTH60N120G2-7	No Equiv Pkg	
SCTW60N120G2	MSC040SMA120B	May require a higher gate drive voltage
SCTW60N120G2AG	MSC040SMA120B	18V drive OK.
SCTWA60N120G2AG	MSC040SMA120B	18V drive OK.
SCT50N120	MSC040SMA120B	18V drive OK.
SCTWA50N120	MSC040SMA120B	18V drive OK.
SCTWA50N120-4	MSC040SMA120B4	18V drive OK.
SCT30N120	MSC080SMA120B	May require a higher gate drive voltage
SCT30N120H	No Equiv Pkg	
SCTWA30N120	MSC080SMA120B	May require a higher gate drive voltage
SCTWA40N120G2V-4	MSC080SMA120B4	May require a higher gate drive voltage
SCTH40N120G2V-7	No Equiv Pkg	
SCTW40N120G2V	MSC080SMA120B	May require a higher gate drive voltage
SCTWA40N120G2V	MSC080SMA120B	May require a higher gate drive voltage
SCTH40N120G2V7AG	No Equiv Pkg	
SCTW40N120G2VAG	MSC080SMA120B	May require a higher gate drive voltage
SCTWA40N120G2AG	MSC080SMA120B	May require a higher gate drive voltage
SCT20N120	MSC180SMA120B	May require a higher gate drive voltage
SCT20N120AG	MSC180SMA120B	May require a higher gate drive voltage
SCT20N120H	No Equiv Pkg	
SCTWA20N120	MSC180SMA120B	May require a higher gate drive voltage
SCT10N120H	No Equiv Pkg	
SCT10N120	MSC360SMA120B	18V drive OK.
SCT10N120AG	MSC360SMA120B	18V drive OK.
SCTWA10N120	MSC360SMA120B	18V drive OK.
SCT20N170	No equiv die size	
SCT20N170AG	No equiv die size	
SCT1000N170	MSC750SMA170B	May require a higher gate drive voltage
SCT1000N170AG	MSC750SMA170B	May require a higher gate drive voltage
These are suggested replacements and should be reviewed by engineering.		

SiC Power Modules and Gate Driver Solutions

WOLFSPEED

Competitor Power Module						Microchip's Recommended Replacement					Microchip's Gate Driver Solutions		
Config.	Voltage	Part Number	Current / Tcase	VGS,on	Package Dim.	Microchip Part Number	Current / Tc = 25 C	VGS,on	Package	Comments	Plug and Play Driver Board	Driver Core Board	Adapter Board
Half Bridge	1200	CAS300M12BM2	498 / 25	20	106x62x30	MSCSM120AM042CD3AG	495	20	D3 Module	Exact	62EM1-0001	2ASC-12A1HP	62CA1
Half Bridge	1200	CAS300M12BM2	498 / 25	20	106x62x30	MSCSM120AM042CT6AG	495	20	SP6	Equivalent, without thermistor	62EM1-0001	2ASC-12A1HP	62CA1
Half Bridge	1200	CAS300M12BM2	498 / 25	20	106x62x30	MSCSM120AM042CT6LIAG	495	20	SP6 Low Ind	Equivalent	N/A	2ASC-12A1HP	SP6CA1
Half Bridge	1200	CAS120M12BM2	200 / 25	20	106x62x30	MSCSM120AM13CD3AG	171	20	D3 Module	Exact	62EM1-0001	2ASC-12A1HP	62CA1
Half Bridge	1200	CAB530M12BM3	719 / 25	15	106x62x30	MSCSM120AM027CD3AG	733	20	D3 Module	Exact, except gate voltage	62EM1-0001	2ASC-12A1HP	62CA1
Half Bridge	1200	CAB760M12HM3	1015 / 25	15	110x65x12	MSCSM120AM02CT6LIAG	947	20	SP6 Low Ind	Equivalent	N/A	2ASC-12A1HP	SP6CA1
Half Bridge	1200	CAB011M12FM3	105 / 50	15	63x34x16	MSCSM120AM31CT1AG	89	20	SP1F 52x42x12	Equivalent	N/A	2ASC-12A1HP	N/A
Half Bridge	1200	CAB011M12FM3	105 / 50	15	63x34x16	MSCSM120AM16CT1AG	173	20	SP1F 52x42x12	Equivalent	N/A	2ASC-12A1HP	N/A
Half Bridge	1200	CAB011M12FM3	105 / 50	15	63x34x16	MSCSM120AM11CT3AG	254	20	SP3F 73x42x12	Equivalent	N/A	2ASC-12A1HP	N/A
Half Bridge	1200	CAB011M12FM3	105 / 50	15	63x34x16	MSCSM120AM08CT3AG	337	20	SP3F 73x42x12	Equivalent	N/A	2ASC-12A1HP	N/A
Half Bridge	1200	CAB016M12FM3	78 / 50	15	63x34x16	MSCSM120AM31CT1AG	89	20	SP1F 52x42x12	Equivalent	N/A	2ASC-12A1HP	N/A
Half Bridge	1200	CAB016M12FM3	78 / 50	15	63x34x16	MSCSM120AM16CT1AG	173	20	SP1F 52x42x12	Equivalent	N/A	2ASC-12A1HP	N/A
Half Bridge	1200	CAB016M12FM3	78 / 50	15	63x34x16	MSCSM120AM11CT3AG	254	20	SP3F 73x42x12	Equivalent	N/A	2ASC-12A1HP	N/A
Half Bridge	1200	CAB016M12FM3	78 / 50	15	63x34x16	MSCSM120AM08CT3AG	337	20	SP3F 73x42x12	Equivalent	N/A	2ASC-12A1HP	N/A
Six-pack	1200	CCS050M12CM2	87 / 25	20	108x45x17	MSCSM120TAM31CT3AG	89	20	SP3F 73x42x12	Equivalent	N/A	2ASC-12A1HP	N/A
Six-pack	1200	CCB021M12FM3	51 / 50	15	62x43x12	MSCSM120TAM31CT3AG	89	20	SP3F 73x42x12	Equivalent	N/A	2ASC-12A1HP	N/A
Half Bridge	1700	CAS300M17BM2	325 / 25	20	106x62x30	MSCSM170AM058CD3AG	346	20	D3 Module	Exact	62EM1-0001	2ASC-17A1HP	62CA4
Half Bridge	1700	CAS300M17BM2	325 / 25	20	106x62x30	MSCSM170AM058CT6LIAG	353	20	D3 Module	Equivalent	N/A	2ASC-17A1HP	SP6CA3
Half Bridge	1700	CAS300M17BM2	325 / 25	20	106x62x30	MSCSM170AM058CT6AG	353	20	SP6	Equivalent	62EM1-0001	2ASC-17A1HP	62CA4
Half Bridge	1700	CAS300M17BM2	325 / 25	20	106x62x30	MSCSM170AM039CT6AG	523	20	SP6	Equivalent	62EM1-0001	2ASC-17A1HP	62CA4
Half Bridge	1700	CAS300M17BM2	325 / 25	20	106x62x30	MSCSM170AM039CD3AG	523	20	D3 Module	Equivalent	62EM1-0001	2ASC-17A1HP	62CA4
Half Bridge	1700	CAS300M17BM2	325 / 25	20	106x62x30	MSCSM170AM029CT6LIAG	676	20	SP6 Low Ind	Equivalent	N/A	2ASC-17A1HP	SP6CA3
						Equivalent: Different package with similar mounting method. Other differences may apply. Engineering should review. Exact: Same package outline. Engineering should verify form, fit, and function.					Plug and Play gate driver boards connect directly to the module.	Gate driver core boards connect directly to the module along with the associated module adapter board.	

These are suggested replacements and should be reviewed by engineering.

ON SEMI

ON Semi Power Module						Microchip's Recommended Replacement					Microchip's Gate Driver Solutions		
Config.	Voltage	Part Number	Current / Tcase	VGS,on	Package Dim.	Microchip Part Number	Current / Tcase	VGS,on	Package	Comments	Plug and Play Driver Board	Driver Core Board	Adapter Board
Half Bridge	1200	NXH006P120MNF2PTG	304 @ 80	20	Module 53x56,7x12	MSCSM120AM08CT3AG	268 @ 80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
Half Bridge	1200	NXH010P120MNF1PTNG	114 @ 80	20	Module 62,8x33,8x12	MSCSM120AM16CT1AG	138 @ 80	20	SP1F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
Dual Boost	1200	NXH40B120MNQ05NG	44 @ 80	20		N/A							
Dual Boost	1200	NXH80B120MNQ05NG	23 @ 80	20		N/A							
Three Channel Boost	1200	NXH40B120MNQ15NG	44 @ 80	20		N/A							

Equivalent cross - A different package but similar method of mounting.

Exact cross - same package outline. An engineer should still evaluate the device.

Plug and Play gate driver boards connect directly to the module.

Gate driver core boards connect directly to the module along with the associated module adapter board.

These are suggested replacements and should be reviewed by engineering.

ST MICROELECTRONICS

ST Power Module						Microchip's Recommended Replacement					Microchip's Gate Driver Solutions		
Config.	Voltage	Part Number	Current / Tcase	VGS,on	Package Dim.	Microchip Part Number	Current / Tcase	VGS,on	Package	Comments	Plug and Play Driver Board	Driver Core Board	Adapter Board
3 Phase bridge	1200	ADP300120W2-L	290 @ 65	20	Module 154,5x142x19	3 x MSCSM120AM042CT6LIAG	395 @80	20	SP6Li	Equivalent Cross	N/A	2ASC-12A1HP	SP6CA1

Equivalent cross - A different package but similar method of mounting.

Exact cross - same package outline. An engineer should still evaluate the device.

Plug and Play gate driver boards connect directly to the module.

Gate driver core boards connect directly to the module along with the

These are suggested replacements and should be reviewed by engineering.

INFINEON

Infineon Power Module						Microchip's Recommended Replacement					Microchip's Gate Driver Solutions		
Config.	Voltage	Part Number	Current / Tcase	VGS,on	Package Dim.	Microchip Part Number	Current / Tcase	VGS,on	Package	Comments	Plug and Play Driver Board	Driver Core Board	Adapter Board
ANPC leg	1200	F3L11MR12W2M1_B74	100 @ 20	20	Module 56,7x62,8x12	N/A							
Full bridge	1200	F4-45MR12W1M1_B76	25 @ 65	15	Module 62,8x33,8x12	MSCSM120HMS0CT3AG	44 @80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
Full bridge	1200	F4-15MR12W2M1_B76	75 @ 25	15	Module 56,7x62,8x12	MSCSM120HMS31CT3AG	71 @80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
Full bridge	1200	F4-23MR12W1M1_B76	45 @ 65	15	Module 62,8x33,8x12	MSCSM120HMS0CT3AG	44 @80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
Full bridge	1200	F4-11MR12W2M1_B76	100 @ 25	15	Module 56,7x62,8x12	MSCSM120HMS16CT3AG	138 @ 80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
Full bridge	1200	F4-23MR12W1M1_B11	50 @ 65	15	Module 62,8x33,8x12	MSCSM120HMS0CT3AG	44 @80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
Full bridge	1200	F4-23MR12W1M1P_B11	50 @ 65	15	Module 62,8x33,8x12	MSCSM120HMS0CT3AG	44 @80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF6MR12W2M1_B70	200 @75	15	Module 56,7x62,8x12	MSCSM120AM11CT3AG	202 @ 80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF11MR12W1M1_B70	100 @95	15	Module 62,8x33,8x12	MSCSM120AM16CT1AG	138 @ 80	20	SP1F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF23MR12W1M1P_B11	50 @80	15	Module 62,8x33,8x12	MSCSM120AM31CT1AG	71 @80	20	SP1F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF6MR12KM1	250 @ 65	15	Module 108x62x30	MSCSM120AM042CD3AG	395 @ 80	20	D3	Exact cross	62EM1-0001	2ASC-12A1HP	62CA1
half bridge	1200	FF2MR12KM1	500 @ 85	15	Module 108x62x30	MSCSM120AM027CD3AG	584 @ 80	20	D3	Exact cross	62EM1-0001	2ASC-12A1HP	62CA1
half bridge	1200	FF11MR12W1M1_B11	100 @ 35	15	Module 62,8x33,8x12	MSCSM120AM16CT1AG	138 @ 80	20	SP1F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF3MR12KM1P	375 @60	15	Module 108x62x30	MSCSM120AM042CD3AG	395 @ 80	20	D3	Exact cross	62EM1-0001	2ASC-12A1HP	62CA1
half bridge	1200	FF2MR12KM1P	500 @60	15	Module 108x62x30	MSCSM120AM027CD3AG	584 @ 80	20	D3	Exact cross	62EM1-0001	2ASC-12A1HP	62CA1
half bridge	1200	FF45MR12W1M1_B11	25 @75	15	Module 62,8x33,8x12	MSCSM120AM50CT1AG	44 @80	20	SP1F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF8MR12W2M1P_B11	150 @ 40	15	Module 56,7x62,8x12	MSCSM120AM11CT3AG	202 @ 80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF08MR12W1MA1_B11A	150 @ 65	15	Module 62,8x33,8x12	MSCSM120AM11CT3AG	202 @ 80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF23MR12W1M1_B11	50 @75	15	Module 62,8x33,8x12	MSCSM120AM31CT1AG	71 @80	20	SP1F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF6MR12W2M1P_B11	200 @10	15	Module 56,7x62,8x12	MSCSM120AM11CT3AG	202 @ 80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF6MR12KM1P	250 @30	15	Module 108x62x30	MSCSM120AM042CD3AG	395 @ 80	20	D3	Exact cross	62EM1-0001	2ASC-12A1HP	62CA1
half bridge	1200	FF11MR12W1M1P_B11	100 @50	15	Module 62,8x33,8x12	MSCSM120AM16CT1AG	138 @ 80	20	SP1F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF6MR12W2M1_B11	200 @10	15	Module 56,7x62,8x12	MSCSM120AM11CT3AG	202 @ 80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
half bridge	1200	FF8MR12W2M1_B11	150 @40	15	Module 56,7x62,8x12	MSCSM120AM11CT3AG	202 @ 80	20	SP3F	Equivalent Cross	N/A	2ASC-12A1HP	N/A
3 phase bridge	1200	FS05MR12A6MA1B	200 @50	15	Module 154,5x142x19	3 x MSCSM120AM042CT6LIAG	395 @ 80	20	SP6Li		N/A	2ASC-12A1HP	SP6CA1
3 phase bridge	1200	FS03MR12A6MA1LB	400 @75	15	Module 154,5x142x19	3 x MSCSM120AM042CT6LIAG	395 @ 80	20	SP6Li		N/A	2ASC-12A1HP	SP6CA1
3 phase bridge	1200	FS03MR12A6MA1B	400 @75	15	Module 154,5x142x19	3 x MSCSM120AM042CT6LIAG	395 @ 80	20	SP6Li		N/A	2ASC-12A1HP	SP6CA1
3 phase bridge	1200	FS45MR12W1M1_B11	25 @75	15	Module 62,8x33,8x12	MSCSM120TAM50CT3AG	44 @80	20	SP3F		N/A	2ASC-12A1HP	N/A
dual Boost	1200	DF11MR12W1M1P_B11	50 @65	15	Module 62,8x33,8x12	N/A							
dual Boost	1200	DF23MR12W1M1P_B11	25 @75	15	Module 62,8x33,8x12	N/A							
dual Boost	1200	DF23MR12W1M1_B11	50 @65	15	Module 62,8x33,8x12	N/A							
dual Boost	1200	DF11MR12W1M1_B11	50 @30	15	Module 62,8x33,8x12	N/A							
										Equivalent cross - A different package but similar method of mounting.	Plug and Play gate driver boards connect directly to the module.	Gate driver core boards connect directly to the module along with the associated module	
										Exact cross - same package outline. An engineer should still evaluate the device.			

These are suggested replacements and should be reviewed by engineering.

Migration Guidelines

General Migration Considerations⁽¹⁾

PARAMETER	DESCRIPTION	RECOMMENDATION
V_{BR} BREAKDOWN VOLTAGE	Maximum operating voltage of the MOSFET or Diode.	Cross-must have a breakdown voltage that is greater than or equal to the original
R_{DS(ON)}	On state resistance of the MOSFET. Make sure temperature condition is equivalent between devices.	Compare maximum value. Evaluate R _{DS(ON)} at typical die operating temperature as Microchip SiC tends to have a lower R _{DS(ON)} temperature coefficient than most competitors. Since R _{DS(ON)} is only one part of the total MOSFET P _{DISS} , variation as much as +/-20% from the original MOSFET can have similar P _{DISS} results, depending on the application.
PACKAGE	Type and size and lead configuration of the package (or die size for Modules). Direct replacement requires the same package type. New designs may use a different package if the cross is not the same as the original.	Vendors have different names for the same type of package. For a direct replacement, check the dimensions and PCB footprint. Thermal resistances for the same package are usually very close. Die size and placement in modules is usually custom. Please consult with Microchip Applications.
V_{GS} GATE DRIVE VOLTAGE	Gate drive voltage for Microchip SiC MOSFETs is +20 V/-5 V. V _{GS} < 18 V will increase R _{DS(ON)} . V _{GS} > -5 V will increase turn-off switching loss and reduce the gate's noise immunity.	Some vendor's MOSFET datasheets specify +15 V/0 V or +18 V/-4 V. Microchip FETs can use +18/-4 V gate drive with only a slight increase in R _{DS(ON)} . A +15 V/0 V gate drive will substantially increase R _{DS(ON)} and reduce noise immunity for Microchip SiC MOSFETs. There are a few topologies/applications where 0V gate drive is possible – such as Flyback or Boost converters. Please consult Microchip Applications for a review of applications where 0V gate drive is used.

Datasheet Considerations⁽¹⁾

TOPIC	DESCRIPTION	RECOMMENDATION
EON AND EOFF SWITCHING LOSS	This is the power dissipated during the time the MOSFET turns on and off. Some of the MOSFET datasheet parameters that affect Eon/Eoff are R _g (ESR), Q _{dg} , V _{th} , C _{oss} (or Q _{oss}). External parameters are the gate drive (voltage range and peak current) and the reverse recovery characteristics in a half-bridge topology.	It is difficult to predict switching performance from the datasheet parameters. Moreover, the test conditions for SiC MOSFET parameters are not standardized, which leads to inaccuracies when comparing switching performance. The recommended MOSFET is considered a good candidate if the four general considerations are met. In-circuit testing and simulation are needed to verify performance.

- (1) In all cases, customer must verify proper MOSFET operation in their circuit regardless of how close the datasheet specification appears to be. This includes testing short-circuit and over-current protection features with the cross-referenced FET.

Cross-reference part performance

Very few (if any) MOSFETs from different vendors will have identical performance. There are always differences in switching speed and power dissipation. Moreover, differences in datasheet conditions, such as gate drive voltages and test currents/voltage make it difficult to compare datasheets from different vendors. These differences are described below and in the comments section of the cross-reference.

Automotive Qualification

Microchip 700 V and 1200 V SiC Schottky diodes are AEC-Q101 qualified.

Microchip 700 V and 1200 V SiC MOSFETs are currently available with industrial qualification and are expected to receive AEC-Q101 qualification before year-end 2021. Please contact Microchip Marketing for schedule and availability when cross-referencing AEC-Q101 MOSFETs.

Definitions

Roughly equivalent with 18 V gate drive

Microchip specifies $R_{DS(ON)}$ at +20 V gate drive while some competitive parts are specified at a lower voltage. Since $R_{DS(ON)}$ increases with decreasing gate voltage, a lower $R_{DS(ON)}$ Microchip part was selected so its (higher) $R_{DS(ON)}$ at the lower gate drive voltage is equivalent to the competitive part.

$R_{DS(ON)}$ equivalent but requires a higher gate drive voltage

The competitive part's $R_{DS(ON)}$ is specified at a gate voltage below the Microchip MOSFET's minimum recommended voltage. $R_{DS(ON)}$ will be equivalent but the gate drive voltage must be increased to +20 V.

No equivalent package

The Microchip device is currently not released in this package. Please contact Microchip Marketing for availability.

No cross

No similar Microchip part is currently available.