

flowSOL0-SiC

1200V / 45mΩ

Features

- Rohm™ Silicon Carbide Power MOSFET
- Rohm™ Silicon Carbide Power Schottky Diode
- Dual Boost Topology
- Ultra Low Inductance with Integrated DC-capacitors
- Extremely Fast Switching with No "Tail" Current
- Solderless Press-fit Mounting Technology

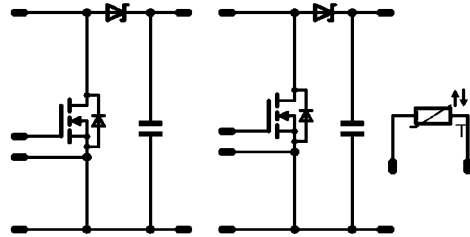
Target Applications

- Solar Inverter
- UPS
- DC-DC

Types

- 10-PZ12B2A045MR-M330L18Y

flow0 12mm housing

Schematic

Maximum Ratings

 T_j=25°C, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
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Boost - Silicon Carbide Power MOSFET

Drain to source breakdown voltage	V _{DS}		1200	V
DC drain current	I _D	T _j =T _{jmax} T _h =80°C	32	A
Pulsed drain current	I _{Dpulse}	t _p limited by T _{jmax} T _c =25°C		A
Power dissipation	P _{tot}	T _j =T _{jmax} T _h =80°C	50	W
Gate-source peak voltage	V _{GS}		+22 -6	V
Maximum junction temperature	T _{jmax}		150	°C

Protection Diode

Peak repetitive reverse voltage	V _{RRM}		1600	V
DC forward current	I _F	T _j =T _{jmax} T _h =80°C	30	A
Repetitive peak forward current	I _{FRM}	t _p limited by T _{jmax}	90	A
Power dissipation per diode	P _{tot}	T _j =T _{jmax} T _h =80°C	42	W
Maximum junction temperature	T _{jmax}		150	°C

Maximum Ratings

$T_j=25^{\circ}\text{C}$, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
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Boost - Silicon Carbide Power Schottky Diode

Peak repetitive reverse voltage	V_{RRM}		1200	V
DC forward current	I_F	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$	40	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}		A
Power dissipation per diode	P_{tot}	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$	70	W
Maximum junction temperature	T_{jmax}		150	$^{\circ}\text{C}$

Thermal Properties

Storage temperature	T_{stg}		$-40\dots+150$	$^{\circ}\text{C}$
Operation temperature under switching condition	T_{op}		$-40\dots(T_{jmax}-25)$	$^{\circ}\text{C}$

Insulation Properties

Insulation voltage	V_{is}	$t=2\text{s}$ DC voltage	4000	V
Creepage distance			12.7	mm
Clearance			12.7	mm

Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
			$V_{GE}[V]$ or $V_{GS}[V]$	$V_r[V]$ or $V_{CE}[V]$ or $V_{DS}[V]$	$I_c[A]$ or $I_F[A]$ or $I_D[A]$	T_j	Min	Typ	Max	

Boost - Silicon Carbide Power MOSFET

Static drain-source ON resistance	$R_{ds(on)}$		18		20	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		45 65	60 85	mΩ
Gate threshold voltage	$V_{(GS)th}$	$V_{DS}=V_{GS}$			0.0088	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$	1.7		3.7	V
Gate to source leakage current	I_{gss}		22 -6	0		$T_j=25^{\circ}C$ $T_j=25^{\circ}C$			0.2 -0.2	μA
Zero gate voltage drain current	I_{dss}		0	1200		$T_j=25^{\circ}C$ $T_j=125^{\circ}C$			0.02	mA
Turn on delay time	$t_{d(ON)}$	$R_{gon}=8\Omega$ $R_{goff}=8\Omega$	16	700	40	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		35		ns
Rise time	t_r					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		34		
Turn off delay time	$t_{d(OFF)}$					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		200		
Fall time	t_f					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		21		
Turn-on energy loss per pulse	E_{on}					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		1.04		mWs
Turn-off energy loss per pulse	E_{off}					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		1		
Total gate charge	Q_g					$T_j=25^{\circ}C$				nC
Gate to source charge	Q_{gs}									
Gate to drain charge	Q_{gd}									
Input capacitance	C_{iss}	f=1MHz	0	25		$T_j=25^{\circ}C$		4400		pF
Output capacitance	C_{oss}							800		
Reverse transfer capacitance	C_{rss}							100		
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal foil thickness=76um Kunze KU-ALF5						1.4		K/W
Thermal resistance chip to case per chip	R_{thJC}							N/A		

Protection Diode

Diode forward voltage	V_F				30	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$	1	1.15 1.11	1.6	V
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal foil thickness=76um Kunze KU-ALF5						1.7		K/W
Thermal resistance chip to case per chip	R_{thJC}							N/A		

Boost - Silicon Carbide Power Schottky Diode

Diode forward voltage	V_F				40	$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		1.5 1.9	1.7	V
Reverse leakage current	I_r			1200		$T_j=25^{\circ}C$ $T_j=150^{\circ}C$		40 320	800	μA
Peak reverse recovery current	I_{RRM}									A
Reverse recovery time	t_{rr}									ns
Reverse recovered charge	Q_{rr}									μC
Peak rate of fall of recovery current	$di(rec)max/dt$									A/μs
Reverse recovery energy	E_{rec}									mWs
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal foil thickness=76um Kunze KU-ALF5						1		K/W
Thermal resistance chip to case per chip	R_{thJC}							N/A		

DC link Capacitor

Capacitance	C					$T_j=25^{\circ}C$	80	100	120	nF
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Thermistor

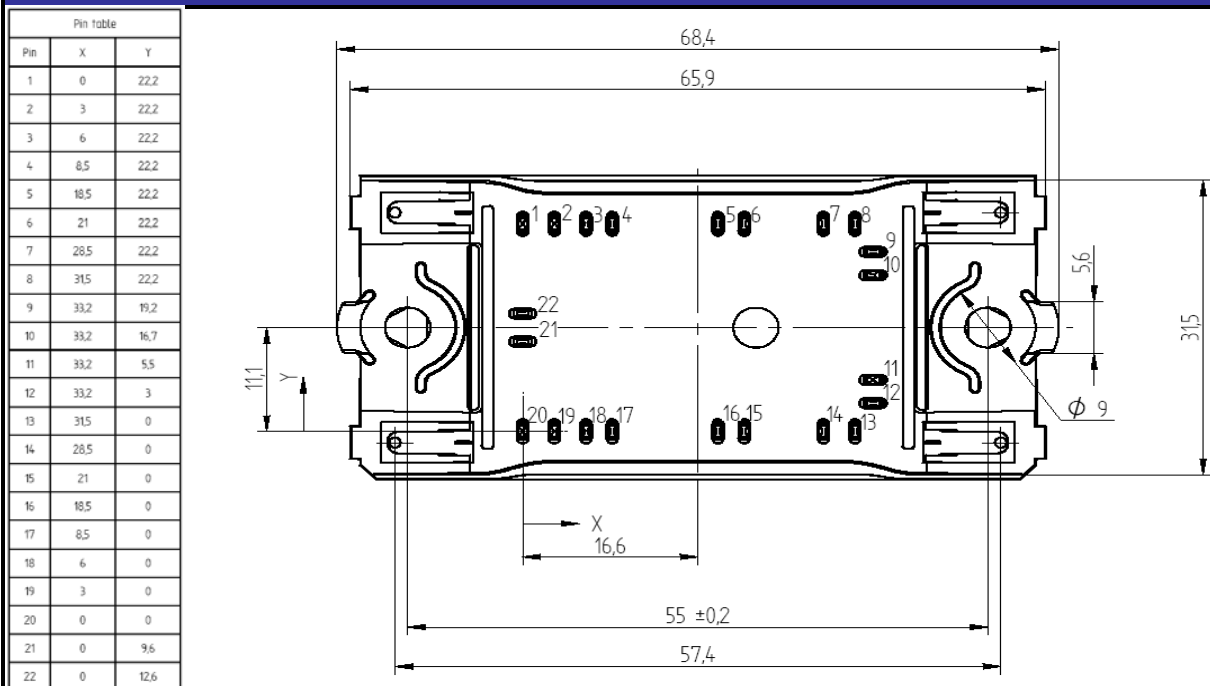
Rated resistance	R_{25} R_{125}					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$	20.9 644	22 750	23.1 872	kΩ Ω
Operating current	I					$T_j=25^{\circ}C$			0.3	mA
Power dissipation	P					$T_j=25^{\circ}C$			200	mW
B-value	$B_{(25/50)}$					$T_j=25^{\circ}C$		3950		K

Ordering Code and Marking - Outline - Pinout

Ordering Code & Marking

Version	Ordering Code	in DataMatrix as	in packaging barcode as
without thermal paste 12mm housing	10-PZ12B2A045MR-M330L18Y	M330L18Y	M330L18Y

Outline



Pinout

