

1200V, 23A Silicon Carbide Power MOSFET

- Low R_{ds(on)} over full temperature range
- Low switching losses
- Very low capacitances
- JANTX / JANS screening options available

Maximum Ratings

PARAMETER	SYMBOL	VALUE	UNIT
Continuous Drain Current $V_{GS} = 20V, T_C = 25^{\circ}C$ $T_C = 100^{\circ}C$	I _d	23 12	A
Pulsed Drain Current $T_C = 25^{\circ}C$	I _{d(pulse)}	60	A
Gate Source Voltage	V _{gs}	-10, +25	V
Power Dissipation $T_C = 25^{\circ}C$	P _{tot}	150	W
Operating Junction Temperature *	T _j	-55 to 150	^o C

Note: * This is a new product – the max junction temperature is expected to go up to 175^oC in future.

MOSFET Characteristics (T_j = 25^oC unless indicated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage $I_D = 100\mu A$	V _{(BR)DSS}	1200	-	-	V
Gate Threshold Voltage $V_{GS} = V_{DS}, I_D = 1mA$	V _{GS(TH)}	1.7	2.2	-	V
Zero Gate Voltage Drain Current $V_{GS} = 0V, V_{DS} = 1200V, T_j = 25^{\circ}C$ $V_{GS} = 0V, V_{DS} = 1200V, T_j = 150^{\circ}C$	I _{DSS}	- -	1 10	100 250	μA
Gate-Source Leakage Current $V_{GS} = 20V, V_{DS} = 0V$	I _{GSS}	-	-	250	nA
On-State Resistance $V_{GS} = 20V, I_D = 20A, T_j = 25^{\circ}C$ $V_{GS} = 20V, I_D = 20A, T_j = 150^{\circ}C$	R _{DS(ON)}	- -	100 160	110 220	m Ω
Transconductance $V_{DS} = 20V, I_{DS} = 20A, T_j = 25^{\circ}C$ $V_{DS} = 20V, I_{DS} = 20A, T_j = 125^{\circ}C$	g _{fs}	- -	9.8 8.5	- -	S
Input Capacitance $V_{DD} = 800V, V_{GS} = 0V, f = 1MHz$	C _{iss}	-	950	-	pF
Output Capacitance $V_{DD} = 800V, V_{GS} = 0V, f = 1MHz$	C _{oss}	-	80	-	pF
Reverse Transfer Capacitance $V_{DD} = 800V, V_{GS} = 0V, f = 1MHz$	C _{rss}	-	6.5	-	pF
Internal Gate Resistance	R _G	-	4.6	-	Ω
Thermal Resistance, Junction to Case	R _{THJC}	-	-	1.00	K/W

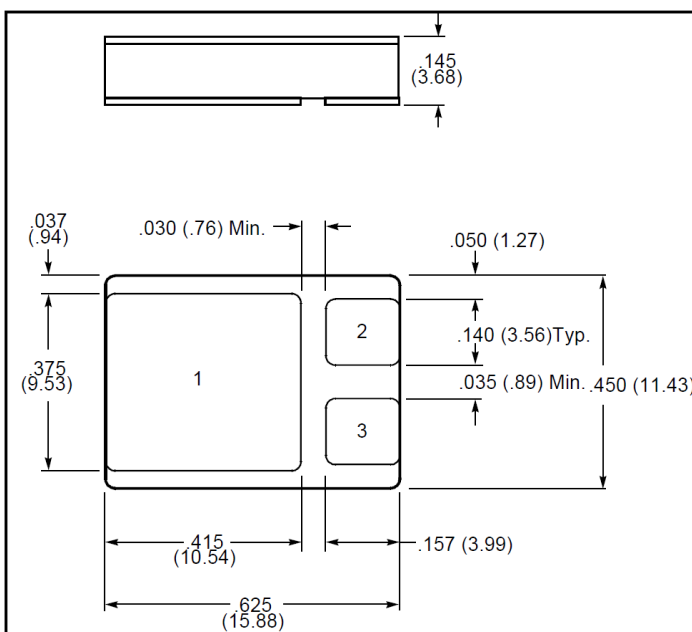
DATASHEET 5313, REV. A.1

Intrinsic Diode Characteristics ($T_j = 25^{\circ}\text{C}$ unless indicated)

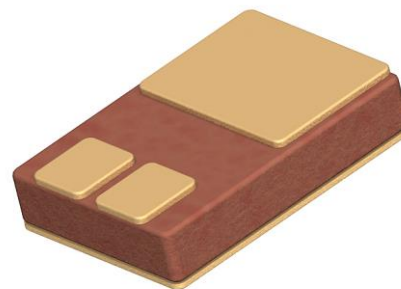
PARAMETER		SYMBOL	MIN	TYP	MAX	UNIT
Forward Voltage	$V_{GS}=-5\text{V}, I_F=10\text{A}$	V_{SD}	-	3.3	-	V
Reverse Recovery Time	$V_{GS}=-5\text{V}, I_F=20\text{A}, V_R=800\text{V}$ $di/dt=100\text{A/us}$	t_{RR}	-	40	-	ns
Reverse Recovery Charge	$V_{GS}=-5\text{V}, I_F=20\text{A}, V_R=800\text{V}$ $di/dt=100\text{A/us}$	Q_{RR}	-	165	-	nC
Peak Reverse Recovery Current	$V_{GS}=-5\text{V}, I_F=20\text{A}, V_R=800\text{V}$ $di/dt=100\text{A/us}$	I_{RRM}	-	6.4	-	A

Mechanical Dimensions (inches/mm):

(SMD-1)



1. Drain
2. Source
3. Gate



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