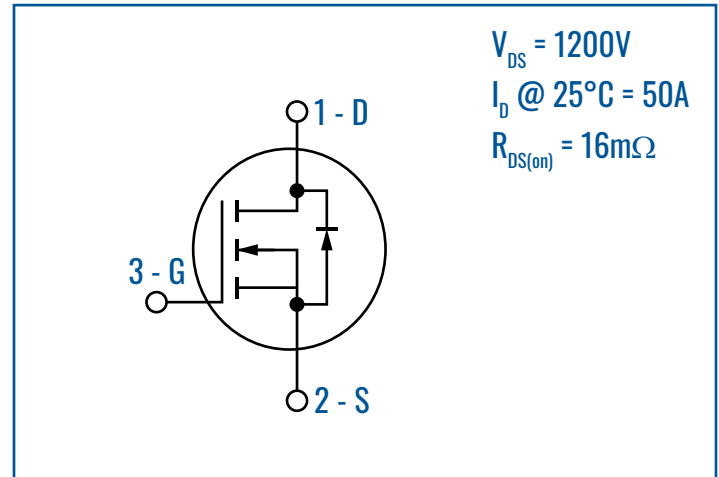


KEY FEATURES

- LOW $R_{DS(on)}$ AND Q_G
- AVALANCHE RATED
- TO-258 3L PACKAGE
- HERMETICALLY SEALED, ISOLATED PACKAGE
- JANTX, JANTXV SCREENING AVAILABLE

APPLICATIONS

- SWITCH-MODE AND RESONANT-MODE POWER SUPPLIES
- DC-DC CONVERTERS
- PFC CIRCUITS
- AC AND DC MOTOR DRIVES
- ROBOTICS AND SERVO CONTROLS



ORDERING GUIDE

Part Number	SD11707
Description	1200V SiC N-Channel Power MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ unless otherwise stated)

PARAMETER	SYMBOL	VALUE	CONDITIONS
Drain to Source Voltage (static)	V_{DSmax}	1200V	$V_{GS} = 0V, I_D = 100\mu A$
Continuous Drain Current	I_D	50A 46A	$V_{GS} = 15V, T_C = 25^\circ C$ $V_{GS} = 15V, T_C = 100^\circ C$
Pulsed Drain Current	I_{DM}	200A	$V_{GS} = 15V$, limited by the package
Max. Power Dissipation	P_D	277W	$T_C = 25^\circ C, T_J = 175^\circ C$ (see figure 2)
Gate-to-Source Voltage (dynamic)	V_{GSmax}	-8/+19V	
Gate-to-Source Voltage (static)	V_{GSop}	-4/+15V	
Operating Junction Temperature	T_J	-55°C to 175°C	
Storage Temperature Range	T_{STG}	-55°C to 175°C	
Solder Temperature	T_L	260°C	1.6mm (0.063") from case for 10s

ELECTRICAL SPECIFICATIONS
 $T_j = 25^\circ\text{C}$ unless otherwise noted

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Drain-to-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 100\mu A$	$V_{(BR)DSS}$	1200			V
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 26.5mA, T_j = 25^\circ\text{C}$	$V_{GS(th)}$	1.8	2.5	3.6	V
	$V_{DS} = V_{GS}, I_D = 26.5mA, T_j = -55^\circ\text{C}$			3.4		
	$V_{DS} = V_{GS}, I_D = 26.5mA, T_j = 175^\circ\text{C}$			2.0		
Zero Gate Voltage Drain Current	$V_{DS} = 1200V, V_{GS} = 0V$	I_{DSS}		1	40	μA
Gate-to-Source Leakage Forward	$V_{GS} = 15V, V_{DS} = 0V$	I_{GSS}		10	250	nA
Drain-to-Source On-State Resistance	$V_{GS} = 15V, I_D = 50A, T_j = 25^\circ\text{C}$	$R_{DS(on)}$		17	22	m Ω
	$V_{GS} = 15V, I_D = 50A, T_j = 175^\circ\text{C}$			25		
Transconductance	$V_{DS} = 20V, I_{DS} = 40A, T_j = 25^\circ\text{C}$	g_{fs}		50		S
	$V_{DS} = 20V, I_{DS} = 40A, T_j = 175^\circ\text{C}$			51		
Input Capacitance	$V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz$	C_{iss}		6377		pF
Output Capacitance		C_{oss}		1327		pF
Reverse Transfer Capacitance		C_{rss}		388		pF
Energy	$V_{DS} = 300V, V_{GS} = -4/15V, I_D = 50A,$ $R_{Gon} / R_{Goff} = 10\Omega, L = 412\mu H$	E_{on}		425		μJ
		E_{off}		926		μJ
Total Gate Charge	$V_{DS} = 300V, V_{GS} = 15V, I_D = 25A$	Q_g		230		nC
Gate-to-Source Charge		Q_{gs}		75		nC
Gate-to-Drain Charge		Q_{gd}		65		nC

REVERSE DIODE ELECTRICAL SPECIFICATIONS
 $T_j = 25^\circ\text{C}$ unless otherwise noted

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Diode Forward Voltage	$V_{GS} = 0V, I_{SD} = 20A, T_j = 25^\circ\text{C}$	V_{SD}		2.6	2.9	V
	$V_{GS} = 0V, I_{SD} = 20A, T_j = -55^\circ\text{C}$			3.0		
	$V_{GS} = 0V, I_{SD} = 20A, T_j = 175^\circ\text{C}$			2.4		
Reverse Recovery Time	$V_{GS} = 0V, I_{SD} = 25A, V_R = 15V, di/dt = 100A/\mu S$	t_{rr}			125	nS
Reverse Recovery Charge	$V_{GS} = 0V, I_{SD} = 25A, V_R = 15V, di/dt = 100A/\mu S$	Q_{RR}		140		nC
Peak Reverse Recovery Current	$V_{GS} = 0V, I_{SD} = 25A, V_R = 15V, di/dt = 100A/\mu S$	I_{RRM}		2.8		A

FIGURE 1 - CONTINUOUS DRAIN CURRENT DERATING VS CASE TEMPERATURE (Typical Performance)

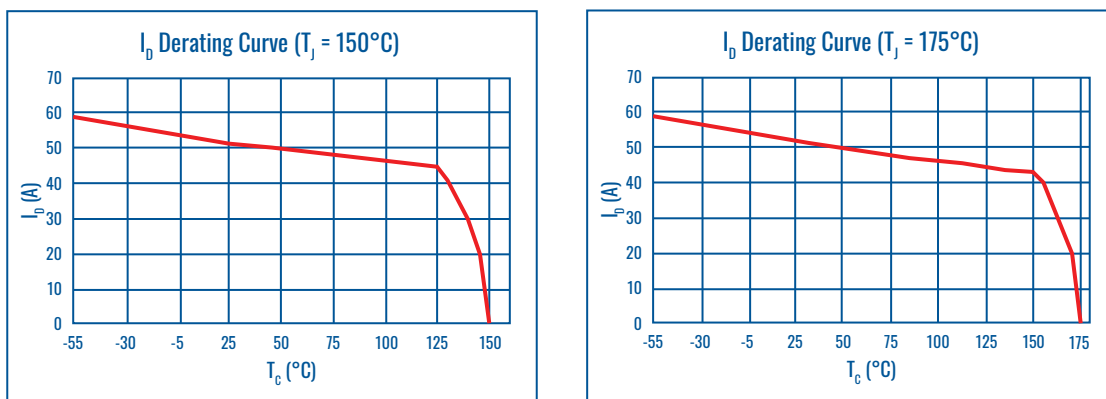
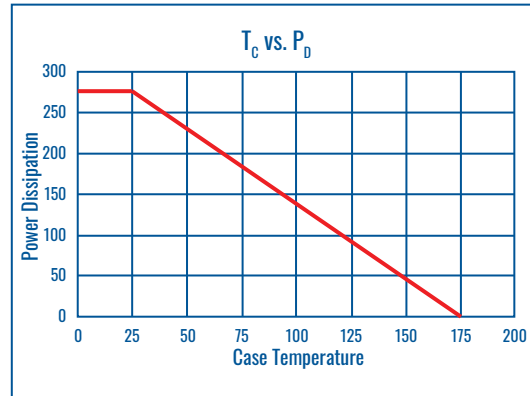
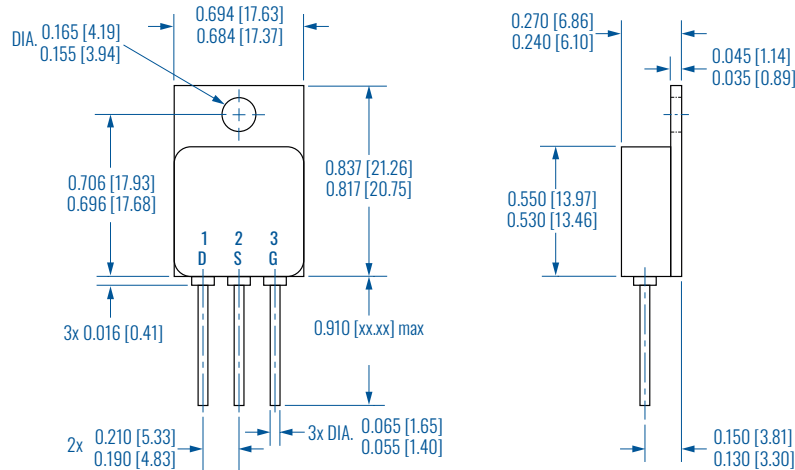


FIGURE 2 - MAXIMUM POWER DISSIPATION DERATING VS. CASE TEMPERATURE (Typical Performance)

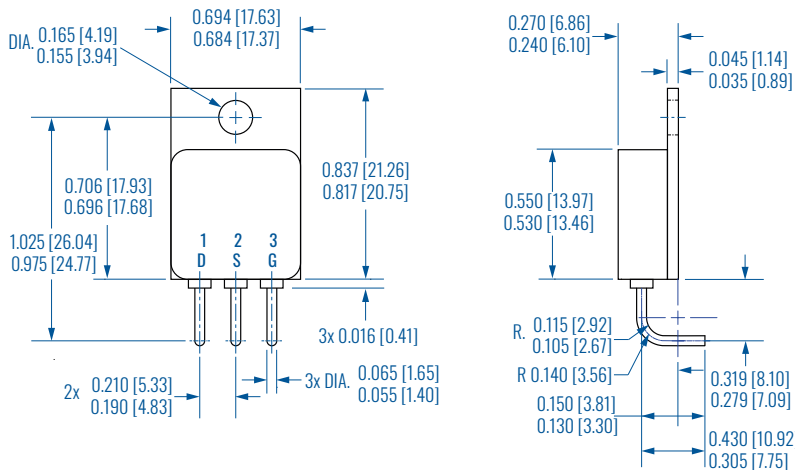


OUTLINE DIMENSIONS

Straight legs



90° bent Legs



All Dimensions are in Inches (mm)