

### Features

- 1) Low on-resistance
- 2) Fast switching speed
- 3) Fast reverse recovery
- 4) Easy to parallel
- 5) Simple to drive
- 6) Pb-free lead plating ; RoHS compliant

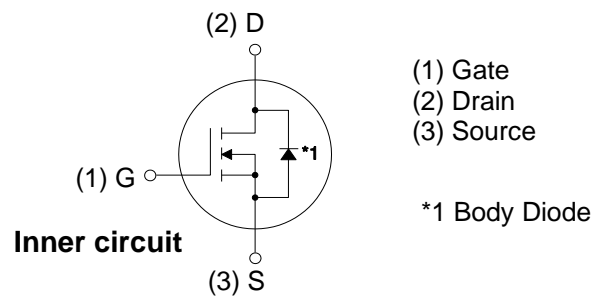
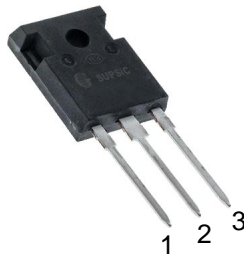
Parameter	Rating	Units
$V_{DS}$	<b>1200</b>	V
$I_D @ 25^\circ\text{C}$	<b>64</b>	A
$R_{DS(on)}$	<b>32</b>	m $\Omega$



### Applications

- Solar inverters
- DC/DC converters
- Switch mode power supplies
- Induction heating

TO-247-3  
Package



### Maximum Ratings ( $T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{DSmax}$	Drain - Source Voltage	1200	V	$V_{GS} = 0\text{ V}, I_D = 100\ \mu\text{A}$	
$V_{GSmax}$	Gate - Source Voltage (dynamic)	-8/+19	V	AC ( $f > 1\text{ Hz}$ )	
$V_{GSop}$	Gate - Source Voltage (static)	-4/+15	V	Static	
$I_D$	Continuous Drain Current	64	A	$V_{GS} = 15\text{ V}, T_C = 25^\circ\text{C}$	
		50		$V_{GS} = 15\text{ V}, T_C = 100^\circ\text{C}$	
$I_{D(pulse)}$	Pulsed Drain Current	120	A	Pulse width $t_p$ limited by $T_{jmax}$	
$P_D$	Power Dissipation	288	W	$T_C = 25^\circ\text{C}, T_J = 175^\circ\text{C}$	
$T_J, T_{stg}$	Operating Junction and Storage Temperature	-40 to +175	$^\circ\text{C}$		
$T_L$	Solder Temperature	260	$^\circ\text{C}$	1.6mm (0.063") from case for 10s	
$M_d$	Mounting Torque	1	Nm lbf-in	M3 or 6-32 screw	
		8.8			

Note (1): When using MOSFET Body Diode  $V_{GSmax} = -4\text{V}/+19\text{V}$

Note (2): MOSFET can also safely operate at  $0/+15\text{ V}$



### Electrical Characteristics (T<sub>c</sub> = 25°C unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	1200			V	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 100 μA	
V <sub>GS(th)</sub>	Gate Threshold Voltage	1.8	2.5	3.6	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 11.5 mA	
			2.0		V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 11.5 mA, T <sub>J</sub> = 175°C	
I <sub>DSS</sub>	Zero Gate Voltage Drain Current		1	50	μA	V <sub>DS</sub> = 1200 V, V <sub>GS</sub> = 0 V	
I <sub>GSS</sub>	Gate-Source Leakage Current		10	250	nA	V <sub>GS</sub> = 15 V, V <sub>DS</sub> = 0 V	
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	23	32	45	mΩ	V <sub>GS</sub> = 15 V, I <sub>D</sub> = 40 A	
			56			V <sub>GS</sub> = 15 V, I <sub>D</sub> = 40 A, T <sub>J</sub> = 175°C	
g <sub>fs</sub>	Transconductance		27		S	V <sub>DS</sub> = 20 V, I <sub>DS</sub> = 40 A	
			22			V <sub>DS</sub> = 20 V, I <sub>DS</sub> = 40 A, T <sub>J</sub> = 175°C	
C <sub>iss</sub>	Input Capacitance		3180		pF	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 800 V f = 100 kHz V <sub>AC</sub> = 25 mV	
C <sub>oss</sub>	Output Capacitance		129				
C <sub>rss</sub>	Reverse Transfer Capacitance		8				
E <sub>oss</sub>	C <sub>oss</sub> Stored Energy		76				μJ
E <sub>ON</sub>	Turn-On Switching Energy (SiC Diode FWD)		1.98		mJ	V <sub>DS</sub> = 800 V, V <sub>GS</sub> = -4 V/+15 V, I <sub>D</sub> = 40 A, R <sub>G(ext)</sub> = 5Ω, L = 157 μH, T <sub>J</sub> = 175°C	
E <sub>OFF</sub>	Turn Off Switching Energy (SiC Diode FWD)		0.80				
E <sub>ON</sub>	Turn-On Switching Energy (Body Diode FWD)		3.10		mJ	V <sub>DS</sub> = 800 V, V <sub>GS</sub> = -4 V/+15 V, I <sub>D</sub> = 40 A, R <sub>G(ext)</sub> = 5Ω, L = 157 μH, T <sub>J</sub> = 175°C	
E <sub>OFF</sub>	Turn Off Switching Energy (Body Diode FWD)		0.72				
t <sub>d(on)</sub>	Turn-On Delay Time		113		ns	V <sub>DD</sub> = 800 V, V <sub>GS</sub> = -4 V/15 V R <sub>G(ext)</sub> = 5 Ω, I <sub>D</sub> = 40 A, L = 157 Timing relative to V <sub>DS'</sub> Inductive load	
t <sub>r</sub>	Rise Time		22				
t <sub>d(off)</sub>	Turn-Off Delay Time		39				
t <sub>f</sub>	Fall Time		19				
R <sub>G(int)</sub>	Internal Gate Resistance		1.7		Ω	f = 1 MHz, V <sub>AC</sub> = 25 mV	
Q <sub>gs</sub>	Gate to Source Charge		35		nC	V <sub>DS</sub> = 800 V, V <sub>GS</sub> = -4 V/15 V I <sub>D</sub> = 40 A Per IEC60747-8-4 pg 21	
Q <sub>gd</sub>	Gate to Drain Charge		40				
Q <sub>g</sub>	Total Gate Charge		113				



### Reverse Diode Characteristics (T<sub>c</sub> = 25°C unless otherwise specified)

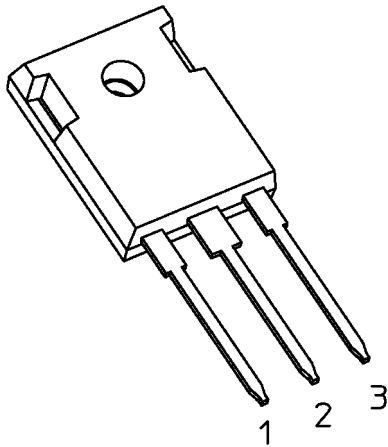
Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V <sub>SD</sub>	Diode Forward Voltage	4.6		V	V <sub>GS</sub> = -4 V, I <sub>SD</sub> = 20 A, T <sub>J</sub> = 25 °C	
		4.2		V	V <sub>GS</sub> = -4 V, I <sub>SD</sub> = 20 A, T <sub>J</sub> = 175 °C	
I <sub>S</sub>	Continuous Diode Forward Current		62	A	V <sub>GS</sub> = -4 V, T <sub>c</sub> = 25 °C	
I <sub>S, pulse</sub>	Diode pulse Current		120	A	V <sub>GS</sub> = -4 V, pulse width t <sub>p</sub> limited by T <sub>jmax</sub>	
t <sub>rr</sub>	Reverse Recover time	69		ns	V <sub>GS</sub> = -4 V, I <sub>SD</sub> = 40 A, V <sub>R</sub> = 800 V dif/dt = 1500 A/μs, T <sub>J</sub> = 175 °C	
Q <sub>rr</sub>	Reverse Recovery Charge	485		nC		
I <sub>rrm</sub>	Peak Reverse Recovery Current	19		A		

### Thermal Characteristics

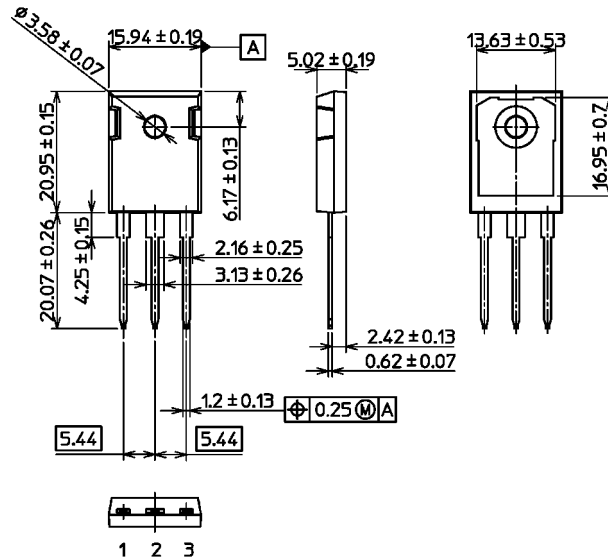
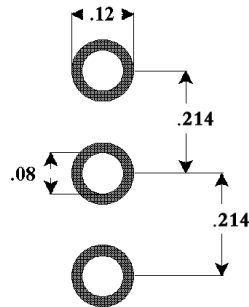
Symbol	Parameter	Typ.	Unit	Test Conditions	Note
R <sub>θJC</sub>	Thermal Resistance from Junction to Case	0.45	°C/W		
R <sub>θJA</sub>	Thermal Resistance From Junction to Ambient	40			

**Package Dimensions**

Unit: mm



TO-247-3


**Recommended Solder Pad Layout**


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