

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

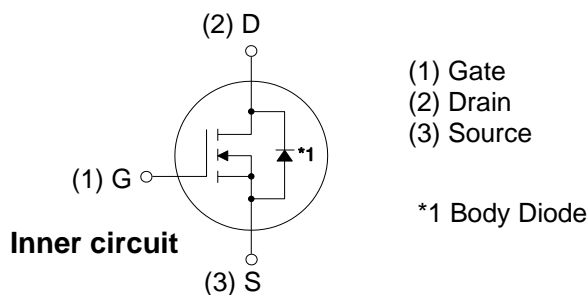
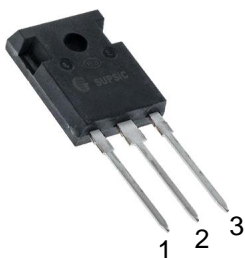
Parameter	Rating	Units
V_{DS}	1200	V
I_D @ 25°C	36	A
$R_{DS(on)}$	80	mΩ



Applications

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

T0-247-3
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	-10/+25	V	Absolute maximum values	
V_{GSop}	Gate - Source Voltage	-5/+20	V	Recommended operational values	
I_D	Continuous Drain Current	36	A	$V_{GS} = 20\text{ V}, T_C = 25^\circ\text{C}$	
		24		$V_{GS} = 20\text{ V}, T_C = 100^\circ\text{C}$	
$I_{D(pulse)}$	Pulsed Drain Current	80	A	Pulse width t_p limited by T_{Jmax}	
P_D	Power Dissipation	190	W	$T_C = 25^\circ\text{C}, T_J = 150^\circ\text{C}$	
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +150	°C		
T_L	Solder Temperature	260	°C	1.6mm (0.063") from case for 10s	
M_d	Mounting Torque	1	Nm lbf-in	M3 or 6-32 screw	
		8.8			



Electrical Characteristics (T_c = 25°C unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
V _{(BR)DSS}	Drain-Source Breakdown Voltage	1200			V	V _{GS} = 0 V, I _D = 100 μA	
V _{GS(th)}	Gate Threshold Voltage	2.0	2.9	4	V	V _{DS} = V _{GS} , I _D = 5 mA	
			2.4		V	V _{DS} = V _{GS} , I _D = 5 mA, T _J = 150°C	
I _{DSS}	Zero Gate Voltage Drain Current		1	100	μA	V _{DS} = 1200 V, V _{GS} = 0 V	
I _{GSS}	Gate-Source Leakage Current			250	nA	V _{GS} = 20 V, V _{DS} = 0 V	
R _{DS(on)}	Drain-Source On-State Resistance		80	99	mΩ	V _{GS} = 20 V, I _D = 20 A	
			147			V _{GS} = 20 V, I _D = 20A, T _J = 150°C	
g _{fs}	Transconductance		10		S	V _{DS} = 20 V, I _{DS} = 20 A	
			9			V _{DS} = 20 V, I _{DS} = 20 A, T _J = 150°C	
C _{iss}	Input Capacitance		1075		pF	V _{GS} = 0 V	
C _{oss}	Output Capacitance		90			V _{DS} = 800 V	
C _{rss}	Reverse Transfer Capacitance		7.5			f = 1 MHz	
E _{oss}	C _{oss} Stored Energy		50			V _{AC} = 25 mV	
E _{AS}	Avalanche Energy, Single Pluse		1		J	I _D = 20A, V _{DD} = 50V	
E _{ON}	Turn-On Switching Energy		525		μJ	V _{DS} = 800 V, V _{GS} = -5/20 V, I _D = 20A, R _{G(ext)} = 2.5Ω, L = 156 μH	
E _{OFF}	Turn Off Switching Energy		72				
t _{d(on)}	Turn-On Delay Time		15		ns	V _{DD} = 800 V, V _{GS} = -5/20 V I _D = 20 A, R _{G(ext)} = 2.5 Ω, R _L = 40 Ω, Timing relative to V _{DS} Per IEC60747-8-4 pg 83	
t _r	Rise Time		22				
t _{d(off)}	Turn-Off Delay Time		24				
t _f	Fall Time		14				
R _{G(int)}	Internal Gate Resistance		3.9		Ω	f = 1 MHz, V _{AC} = 25 mV	
Q _{gs}	Gate to Source Charge		17		nC	V _{DS} = 800 V, V _{GS} = -5/20 V I _D = 20 A Per IEC60747-8-4 pg 21	
Q _{gd}	Gate to Drain Charge		29				
Q _g	Total Gate Charge		69				

Reverse Diode Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V _{SD}	Diode Forward Voltage	4.3		V	V _{GS} = -5 V, I _{SD} = 10 A	
		3.8		V	V _{GS} = -5 V, I _{SD} = 10 A, T _J = 150 °C	
I _S	Continuous Diode Forward Current		36	A	T _C = 25°C	
t _{rr}	Reverse Recover time	24		ns	V _{GS} = -5 V, I _{SD} = 20 A, V _R = 800 V dif/dt = 1950 A/μs	
Q _{rr}	Reverse Recovery Charge	152		nC		
I _{rrm}	Peak Reverse Recovery Current	10		A		

Note (1): When using SiC Body Diode the maximum recommended V_{GS} = -5V

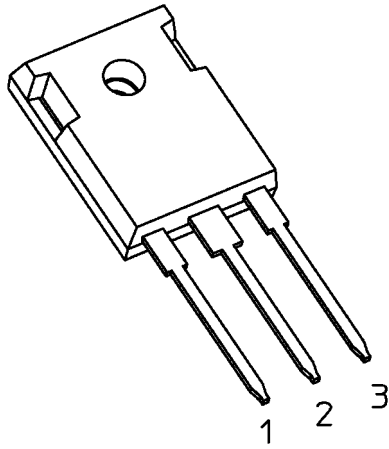
Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
R _{θJC}	Thermal Resistance from Junction to Case	0.60	0.65	°C/W		
R _{θJA}	Thermal Resistance From Junction to Ambient		40			

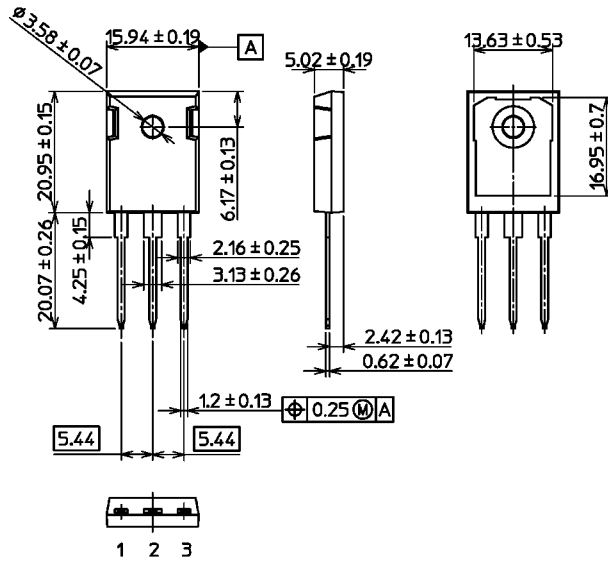


Package Dimensions

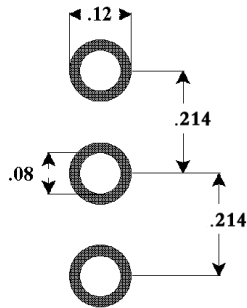
Unit: mm



TO-247-3



Recommended Solder Pad Layout



TO-247-3