

- 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

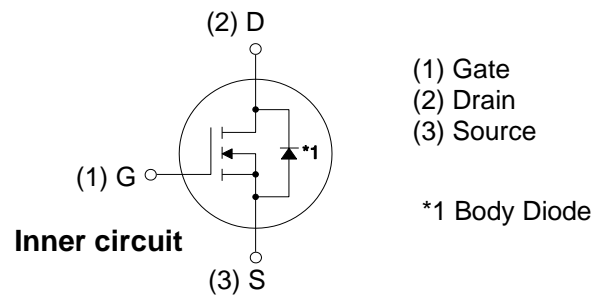
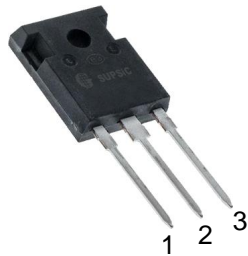
Parameter	Rating	Units
V_{DS}	1200	V
$I_D @ 25^\circ\text{C}$	11	A
$R_{DS(on)}$	280	m Ω



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	11	A	$V_{GS} = 20\text{ V}, T_C = 25^\circ\text{C}$	
		7		$V_{GS} = 20\text{ V}, T_C = 100^\circ\text{C}$	
$I_{D(pulse)}$	Pulsed Drain Current	20	A	Pulse width t_p limited by T_{jmax}	
P_D	Power Dissipation	69	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	$^\circ\text{C}$		
T_L	Solder Temperature	260	$^\circ\text{C}$	1.6 mm (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	3.1	4	V	V _{DS} = V _{GS} , I _D = 1.25mA	
			2.7		V	V _{DS} = V _{GS} , I _D = 1.25mA, 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		320	360	mΩ	V _{GS} = 20 V, I _D = 6 A	
			520			V _{GS} = 20 V, I _D = 6 A, T _J = 150 °C	
g _{fs}	Transconductance		2.6		S	V _{DS} = 20 V, I _{DS} = 6 A	
			2.5			V _{DS} = 20 V, I _{DS} = 6 A, T _J = 150 °C	
C _{iss}	Input Capacitance		210		pF	V _{GS} = 0 V	
C _{oss}	Output Capacitance		31			V _{DS} = 800 V	
C _{rss}	Reverse Transfer Capacitance		4			f = 1 MHz	
E _{oss}	C _{oss} Stored Energy		17			V _{AC} = 25 mV	
E _{ON}	Turn-On Switching Energy (Body Diode)		110		μJ	V _{DS} = 800 V, V _{GS} = -5/20 V, I _D = 6A, R _{G(ext)} = 2.5Ω, L = 404 μH FWD = Internal Body Diode of MOSFET	
E _{OFF}	Turn Off Switching Energy (Body Diode)		10				
E _{ON}	Turn-On Switching Energy (External Diode)		94		μJ	V _{DS} = 800 V, V _{GS} = -5/20 V, I _D = 6A, R _{G(ext)} = 2.5Ω, L = 404 μH FWD = External SiC Diode	
E _{OFF}	Turn Off Switching Energy (External Diode)		9.8				
t _{d(on)}	Turn-On Delay Time		6		ns	V _{DD} = 800 V, V _{GS} = -5/20 V I _D = 6 A, R _{G(ext)} = 2.5 Ω, Inductive Load Timing relative to V _{DS} Per IEC60747-8-4 pg 21	
t _r	Rise Time		20				
t _{d(off)}	Turn-Off Delay Time		10				
t _f	Fall Time		16				
R _{G(int)}	Internal Gate Resistance		10		Ω	f = 1 MHz, V _{AC} = 25 mV, ESR of C _{ISS}	
Q _{gs}	Gate to Source Charge		6		nC	V _{DS} = 800 V, V _{GS} = -5/20 V I _D = 6 A	
Q _{gd}	Gate to Drain Charge		7			Per IEC60747-8-4 pg 21	
Q _g	Gate Charge Total		17				



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} = 3 A	
		3.8		V	V _{GS} = -5 V, I _{SD} = 3 A, T _J = 150 °C	
I _S	Continuous Diode Forward Current		12	A	V _{GS} = -5 V, T _C = 25 °C	
I _{S, pulse}	Diode Pulse Current		20		V _{GS} = -5 V, Pulse width t _p limited by T _{Jmax}	
t _{rr}	Reverse Recovery time	17		ns	V _{GS} = -5 V, I _{SD} = 6 A, V _R = 800 V dif/dt = 2985 A/μs	
Q _{rr}	Reverse Recovery Charge	50		nC		
I _{rrm}	Peak Reverse Recovery Current	5		A		
t _{rr}	Reverse Recovery time	26		ns	V _{GS} = -5 V, I _{SD} = 6 A, V _R = 800 V dif/dt = 1000 A/μs	
Q _{rr}	Reverse Recovery Charge	45		nC		
I _{rrm}	Peak Reverse Recovery Current	4		A		

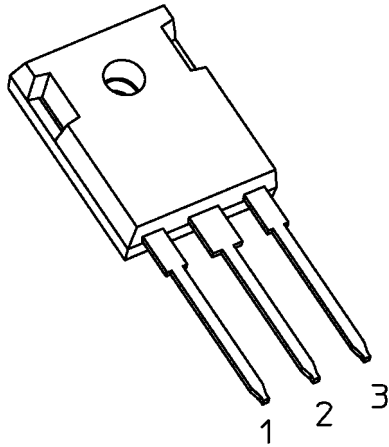
Note (1): When using SiC Body Diode the maximum recommended V_{GS} = -5V

Thermal Characteristics

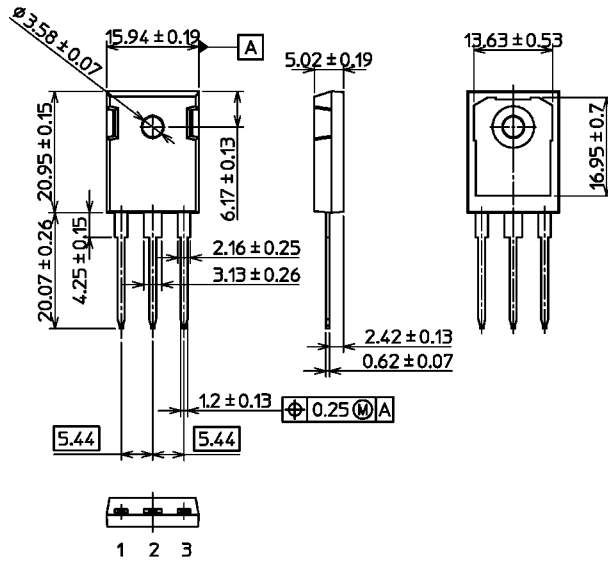
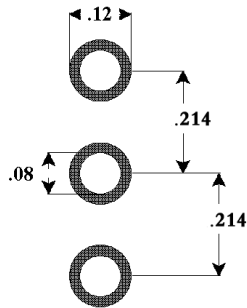
Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
R _{θJC}	Thermal Resistance from Junction to Case	1.53	1.8	°C/W		
R _{θJA}	Thermal Resistance from Junction to Ambient		40			

Package Dimensions

Unit: mm



TO-247-3


Recommended Solder Pad Layout


TO-247-3