

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
$I_D @ 25^\circ\text{C}$	33	A
$R_{DS(on)}$	75	m Ω



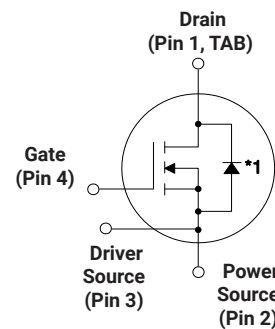
Applications

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



Inner circuit

TO-247-4
Package



- (1) Drain
- (2) Power Source
- (3) Driver Source
- (4) Gate

*1 Body Diode

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	33	A	$V_{GS} = 15\text{ V}, T_c = 25^\circ\text{C}$	
		22		$V_{GS} = 15\text{ V}, T_c = 100^\circ\text{C}$	
$I_{D(pulse)}$	Pulsed Drain Current	85	A	Pulse width t_p limited by T_{jmax}	
P_D	Power Dissipation	136	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	

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 ($T_c = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	1200			V	$V_{GS} = 0\text{ V}, I_D = 100\ \mu\text{A}$	
$V_{GS(th)}$	Gate Threshold Voltage	1.8	2.5	3.6	V	$V_{DS} = V_{GS}, I_D = 5\ \text{mA}$	
			2.2		V	$V_{DS} = V_{GS}, I_D = 5\ \text{mA}, T_J = 175^\circ\text{C}$	
I_{DSS}	Zero Gate Voltage Drain Current		1	50	μA	$V_{DS} = 1200\ \text{V}, V_{GS} = 0\ \text{V}$	
I_{GSS}	Gate-Source Leakage Current		10	250	nA	$V_{GS} = 15\ \text{V}, V_{DS} = 0\ \text{V}$	
$R_{DS(on)}$	Drain-Source On-State Resistance		75	95	m Ω	$V_{GS} = 15\ \text{V}, I_D = 20\ \text{A}$	
			125			$V_{GS} = 15\ \text{V}, I_D = 20\ \text{A}, T_J = 175^\circ\text{C}$	
g_{fs}	Transconductance		12		S	$V_{DS} = 20\ \text{V}, I_{DS} = 20\ \text{A}$	
			13			$V_{DS} = 20\ \text{V}, I_{DS} = 20\ \text{A}, T_J = 175^\circ\text{C}$	
C_{iss}	Input Capacitance		1305		pF	$V_{GS} = 0\ \text{V}, V_{DS} = 800\ \text{V}$ $f = 1\ \text{MHz}$ $V_{AC} = 25\ \text{mV}$	
C_{oss}	Output Capacitance		59				
C_{rss}	Reverse Transfer Capacitance		2				
E_{oss}	C_{oss} Stored Energy		35				μJ
E_{ON}	Turn-On Switching Energy (Body Diode FWD)		275		μJ	$V_{DS} = 800\ \text{V}, V_{GS} = -4\ \text{V}/15\ \text{V}, I_D = 20\ \text{A},$ $R_{G(ext)} = 0\ \Omega, L = 156\ \mu\text{H}, T_J = 150^\circ\text{C}$	
E_{OFF}	Turn-Off Switching Energy (Body Diode FWD)		77				
$t_{d(on)}$	Turn-On Delay Time		33		ns	$V_{DD} = 800\ \text{V}, V_{GS} = -4\ \text{V}/15\ \text{V}$ $I_D = 20\ \text{A}, R_{G(ext)} = 0\ \Omega,$ Timing relative to V_{DS} Inductive load	
t_r	Rise Time		14				
$t_{d(off)}$	Turn-Off Delay Time		40				
t_f	Fall Time		10				
$R_{G(int)}$	Internal Gate Resistance		9.0		Ω	$f = 1\ \text{MHz}, V_{AC} = 25\ \text{mV}$	
Q_{gs}	Gate to Source Charge		17		nC	$V_{DS} = 800\ \text{V}, V_{GS} = -4\ \text{V}/15\ \text{V}$ $I_D = 20\ \text{A}$ Per IEC60747-8-4 pg 21	
Q_{gd}	Gate to Drain Charge		20				
Q_g	Total Gate Charge		51				

Reverse Diode Characteristics ($T_c = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_{SD}	Diode Forward Voltage	4.5		V	$V_{GS} = -4\ \text{V}, I_{SD} = 10\ \text{A}$	
		4.0		V	$V_{GS} = -4\ \text{V}, I_{SD} = 10\ \text{A}, T_J = 175^\circ\text{C}$	
I_S	Continuous Diode Forward Current		26	A	$V_{GS} = -4\ \text{V}, T_J = 25^\circ\text{C}$	
$I_{S,pulse}$	Diode pulse Current	80		A	$V_{GS} = -4\ \text{V},$ pulse width t_p limited by T_{jmax}	
t_{rr}	Reverse Recover time	22		ns	$V_{GS} = -4\ \text{V}, I_{SD} = 20\ \text{A}, V_R = 800\ \text{V}$ $dif/dt = 3600\ \text{A}/\mu\text{s}, T_J = 150^\circ\text{C}$	
Q_{rr}	Reverse Recovery Charge	263		nC		
I_{rrm}	Peak Reverse Recovery Current	18		A		

Thermal Characteristics

Symbol	Parameter	Max.	Unit	Test Conditions	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.1	$^\circ\text{C}/\text{W}$		
$R_{\theta JA}$	Thermal Resistance From Junction to Ambient	40			

Package Dimensions

Unit: mm

