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}	**1000**	V
$I_{D\ @\ 25^{\circ}C}$	**24**	A
$R_{DS(on)}$	**120**	m Ω

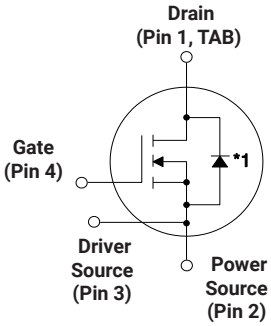
Applications

- 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 ˚C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{DSmax}	Drain - Source Voltage	1000	V	V_{GS} = 0 V, I_D = 100 µA	
V_{GSmax}	Gate - Source Voltage (dynamic)	-8/+19	V	AC (f >1 Hz)	
V_{GSop}	Gate - Source Voltage (static)	-4/+15	V	Static	
I_D	Continuous Drain Current	24	A	V_{GS} = 15 V, T_C = 25˚C	
		16		V_{GS} = 15 V, T_C = 100˚C	
$I_{D(pulse)}$	Pulsed Drain Current	50	A	Pulse width t_P limited by T_{jmax}	
P_D	Power Dissipation	92	W	T_C=25˚C, T_J = 150 ˚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	

Note (1): When using MOSFET Body Diode V_{GSmax} = -4V/+19V
Note (2): MOSFET can also safely operate at 0/+15 V

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	1000			V	V_{GS} = 0 V, I_D = 100 µA	
$V_{GS(th)}$	Gate Threshold Voltage	1.8	2.1	3.7	V	V_{DS} = V_{GS}, I_D = 3 mA	
			1.6		V	V_{DS} = V_{GS}, I_D = 3 mA, T_J = 150°C	
I_{DSS}	Zero Gate Voltage Drain Current		1	100	µA	V_{DS} = 1000 V, V_{GS} = 0 V	
I_{GSS}	Gate-Source Leakage Current		10	250	nA	V_{GS} = 15 V, V_{DS} = 0 V	
$R_{DS(on)}$	Drain-Source On-State Resistance		120	155	mΩ	V_{GS} = 15 V, I_D = 15 A	
			175			V_{GS} = 15 V, I_D = 15 A, T_J = 150°C	
g_{fs}	Transconductance		9.2		S	V_{DS}= 20 V, I_{DS}= 15 A	
			7.1			V_{DS}= 20 V, I_{DS}= 15 A, T_J = 150°C	
C_{iss}	Input Capacitance		366		pF	V_{GS} = 0 V, V_{DS} = 700 V f = 1 MHz V_{AC} = 25 mV	
C_{oss}	Output Capacitance		48				
C_{rss}	Reverse Transfer Capacitance		3				
E_{oss}	C_{oss} Stored Energy		12.2		µJ		
E_{ON}	Turn-On Switching Energy (Body Diode FWD)		120		µJ	V_{DS} = 700 V, V_{GS} = -4 V/15 V, I_D = 15A, $R_{G(ext)}$ = 2.5Ω, L= 158µH, T_J = 150°C	
E_{OFF}	Turn Off Switching Energy (Body Diode FWD)		22				
$t_{d(on)}$	Turn-On Delay Time		5		ns	V_{DD} = 700 V, V_{GS} = -4 V/15 V I_D = 15 A, $R_{G(ext)}$ = 2.5 Ω, Timing relative to V_{DS} Inductive load	
t_r	Rise Time		9				
$t_{d(off)}$	Turn-Off Delay Time		14				
t_f	Fall Time		7				
$R_{G(int)}$	Internal Gate Resistance		13		Ω	f = 1 MHz, V_{AC} = 25 mV	
Q_{gs}	Gate to Source Charge		5		nC	V_{DS} = 700 V, V_{GS} = -4 V/15 V I_D = 15 A Per IEC60747-8-4 pg 21	
Q_{gd}	Gate to Drain Charge		10				
Q_g	Total Gate Charge		20				

Reverse Diode Characteristics (T_C = 25˚C unless otherwise specified)

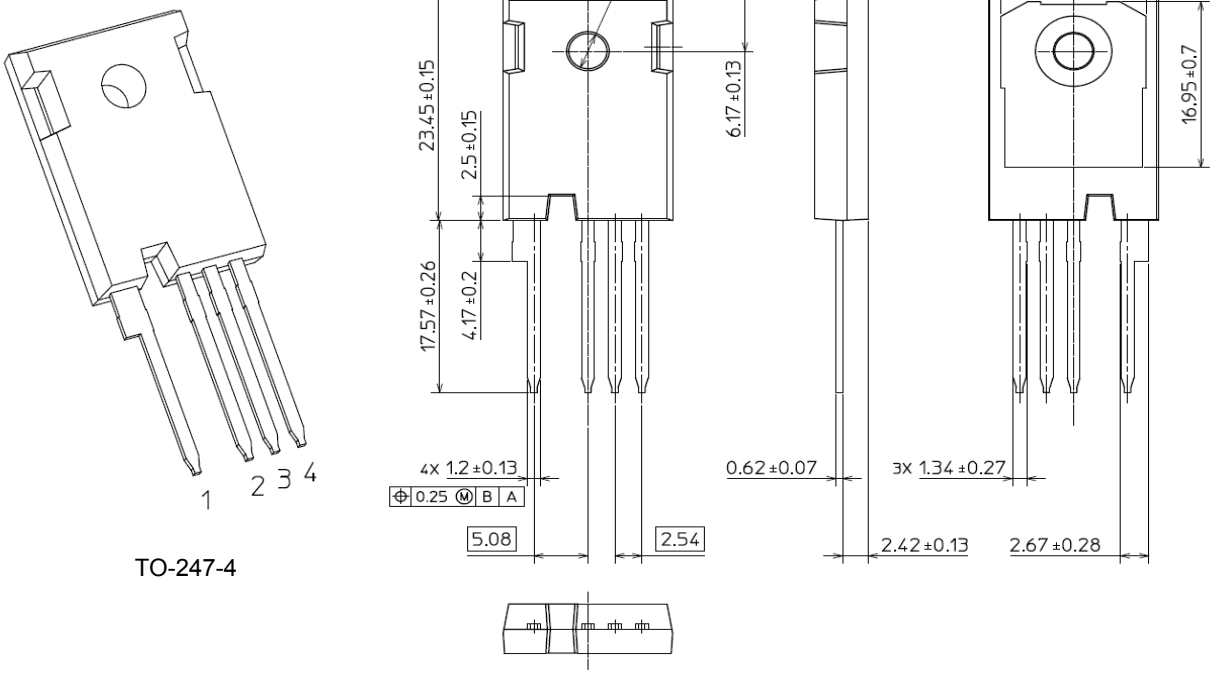
Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_{SD}	Diode Forward Voltage	4.8		V	V_{GS} = -4 V, I_{SD} = 7.5 A	
		4.4		V	V_{GS} = -4 V, I_{SD} = 7.5 A, T_J = 150 °C	
I_S	Continuous Diode Forward Current		15	A	V_{GS} = -4 V	
$I_{S, pulse}$	Diode pulse Current		50	A	V_{GS} = -4 V, pulse width t_P limited by T_{jmax}	
t_{rr}	Reverse Recover time	20		ns	V_{GS} = -4 V, I_{SD} = 15 A, V_R = 700 V dif/dt = 2400 A/µs, T_J = 150 °C	
Q_{rr}	Reverse Recovery Charge	193		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	1.5	°C/W		
$R_{\theta JA}$	Thermal Resistance From Junction to Ambient	40			

Package Dimensions

Unit: mm



TO-247-4