

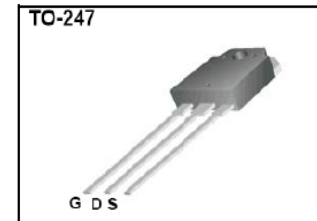
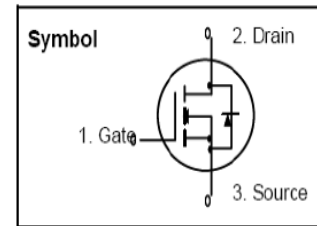
N-Channel MOSFET

Features

- $R_{DS(on)}$ (Max) 0.285Ω @ $V_{GS}=10V$
- Gate Charge (Typical) 90nC
- Improved dv/dt Capability, High Ruggedness
- 100% Avalanche Tested
- Maximum Junction Temperature Range (150℃)

General Description

This Power MOSFET is manufactured advanced planar stripe, DMOS technology. This latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics. These devices are well suited for high efficiency switch mode power supplies



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{DSS}	Drain to Source Voltage	600	V
I_D	Continuous Drain Current (@ $T_C=25^\circ C$)	22.0	A
	Continuous Drain Current (@ $T_C=100^\circ C$)	13.5	A
I_{DM}	Drain Current Pulsed (Note 1)	88.0	A
V_{GS}	Gate to Source Voltage	±30	V
E_{AS}	Single Pulsed Avalanche Energy (Note 2)	1399	mJ
E_{AR}	Repetitive Avalanche Energy (Note 1)	30.5	mJ
dv/dt	Peak Diode Recovery dv/dt (Note 3)	4.5	V/ns
P_D	Total Power Dissipation (@ $T_C=25^\circ C$)	305	W
	Derating factor above 25℃	2.44	W/℃
T_{STG}, T_J	Operating Junction Temperature & Storage Temperature	- 55 ~ 150	℃
T_L	Maximum Lead Temperature for soldering purpose, 1/8 from Case for 5seconds	300	℃

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min.	Typ.	Max.	
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	-	-	0.41	℃/W
$R_{\theta CS}$	Thermal Resistance, Case to Sink	-	0.24	-	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	-	-	62.5	℃/W

Electrical Characteristics ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	600	-	-	V
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temperature coefficient	$I_D=250\mu A$, referenced to 25°C	-	0.6	-	V/ $^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=600V, V_{GS}=0V$	-	-	10	μA
		$V_{DS}=480V, T_C=125^\circ\text{C}$	-	-	100	μA
I_{GSS}	Gate-Source Leakage, Forward	$V_{GS}=30V, V_{DS}=0V$	-	-	100	nA
	Gate-Source Leakage, Reverse	$V_{GS}=-30V, V_{DS}=0V$	-	-	-100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	3.0	-	5.0	V
$R_{DS(on)}$	Static Drain-Source On-state Resistance	$V_{GS}=10V, I_D=11.0A$	-	0.240	0.285	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=25V, f=1\text{MHz}$	-	3500	-	pF
C_{oss}	Output Capacitance		-	450	-	
C_{riss}	Reverse Transfer Capacitance		-	46	-	
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=300V, I_D=22.0A, R_G=25\Omega$ (Note 4,5)	-	80	-	ns
t_r	Rise Time		-	250	-	
$t_{d(off)}$	Turn-off Delay Time		-	180	-	
t_f	Fall Time		-	155	-	
Q_g	Total Gate Charge	$V_{DS}=480V, V_{GS}=10V, I_D=22.0A$ (Note 4,5)	-	90	-	nC
Q_{gs}	Gate-Source Charge		-	20	-	
Q_{gd}	Gate-Drain Charge(Miller Charge)		-	40	-	

Source-Drain Diode Ratings and Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	Integral Reverse p-n Junction Diode in the MOSFET	-	-	22.0	A
I_{SM}	Pulsed Source Current		-	-	88.0	
V_{SD}	Diode Forward Voltage	$I_S=22.0A, V_{GS}=0V$	-	-	1.5	V
t_{rr}	Reverse Recovery Time	$I_S=22.0A, V_{GS}=0V, dI_F/dt=100A/\mu s$	-	450	-	ns
Q_{rr}	Reverse Recovery Charge		-	5.5	-	μC

*** Notes**

1. Repetition rating : Pulse width limited by Junction temperature
2. $L=5.3\text{mH}, I_{AS}=22.0A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$
3. $I_{SD}\leq 22.0A, di/dt\leq 200A/\mu s, V_{DD}\leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$
4. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
5. Essentially independent of operating temperature