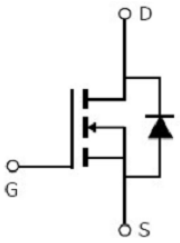
Main Product Characteristics:

V_{DSS}	900V
R_{DS}(on)	3.6ohm(typ.)
I_D	4A

TO220F

Marking and Pin Assignment



Schematic Diagram

Features and Benefits:

- Advanced trench MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150℃ operating temperature

Description:

It utilizes the latest trench processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications

Absolute max Rating:

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	4	A
I_D @ TC = 100°C	Continuous Drain Current, V_{GS} @ 10V ①	2.5	
I_{DM}	Pulsed Drain Current ②	16	
P_D @TC = 25°C	Power Dissipation ③	30	W
	Linear Derating Factor	0.24	W/°C
V_{DS}	Drain-Source Voltage	900	V
V_{GS}	Gate-to-Source Voltage	± 30	V
E_{AS}	Single Pulse Avalanche Energy	650	mJ
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

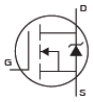
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	4.17	℃/W
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	100	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

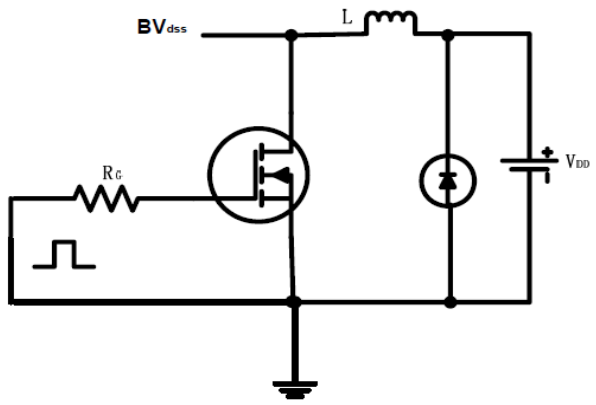
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	900	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	3.6	4.8	Ω	V_{GS}=10V,I_D = 2A
$V_{GS(th)}$	Gate threshold voltage	2	—	4	V	V_{DS} = V_{GS}, I_D = 250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} = 900V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =30V
		—	—	-100		V_{GS} = -30V
Q_g	Total gate charge	—	16	—	nC	I_D = 4A,
Q_{gs}	Gate-to-Source charge	—	3	—		V_{DS}=400V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	6	—		V_{GS} = 10V
$t_{d(on)}$	Turn-on delay time	—	10	—	ns	V_{GS}=10V, V_{DS} =400V, R_{GEN}=12Ω I_D =4A
t_r	Rise time	—	10	—		
$t_{d(off)}$	Turn-Off delay time	—	30	—		
t_f	Fall time	—	15	—		
C_{iss}	Input capacitance	—	485	—	pF	V_{GS} = 0V V_{DS} = 25V f = 1MHz
C_{oss}	Output capacitance	—	45	—		
C_{rss}	Reverse transfer capacitance	—	20	—		

Source-Drain Ratings and Characteristics

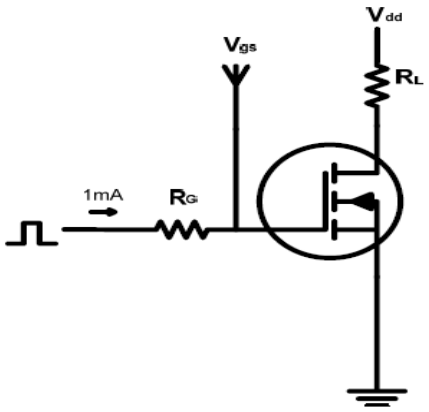
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	4	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	16	A	
V_{SD}	Diode Forward Voltage	—	—	1.5	V	I_S=4A, V_{GS}=0V
t_{rr}	Reverse Recovery Time	—	130	—	ns	T_J = 25°C, I_F =4A, di/dt = 100A/μs
Q_{rr}	Reverse Recovery Charge	—	440	—	nC	

Test circuits and Waveforms

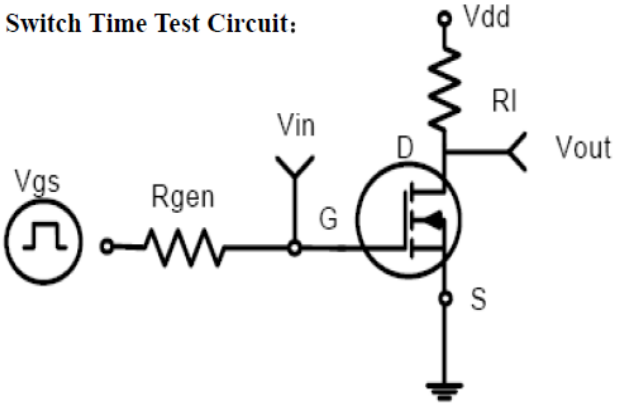
EAS test circuits:



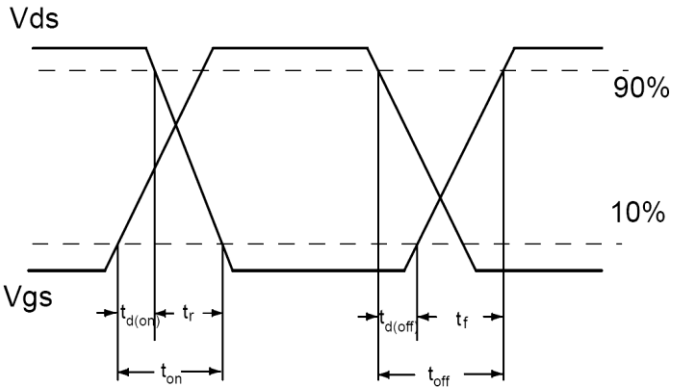
Gate charge test circuit:



Switch Time Test Circuit:



Switch Waveforms:



Notes:

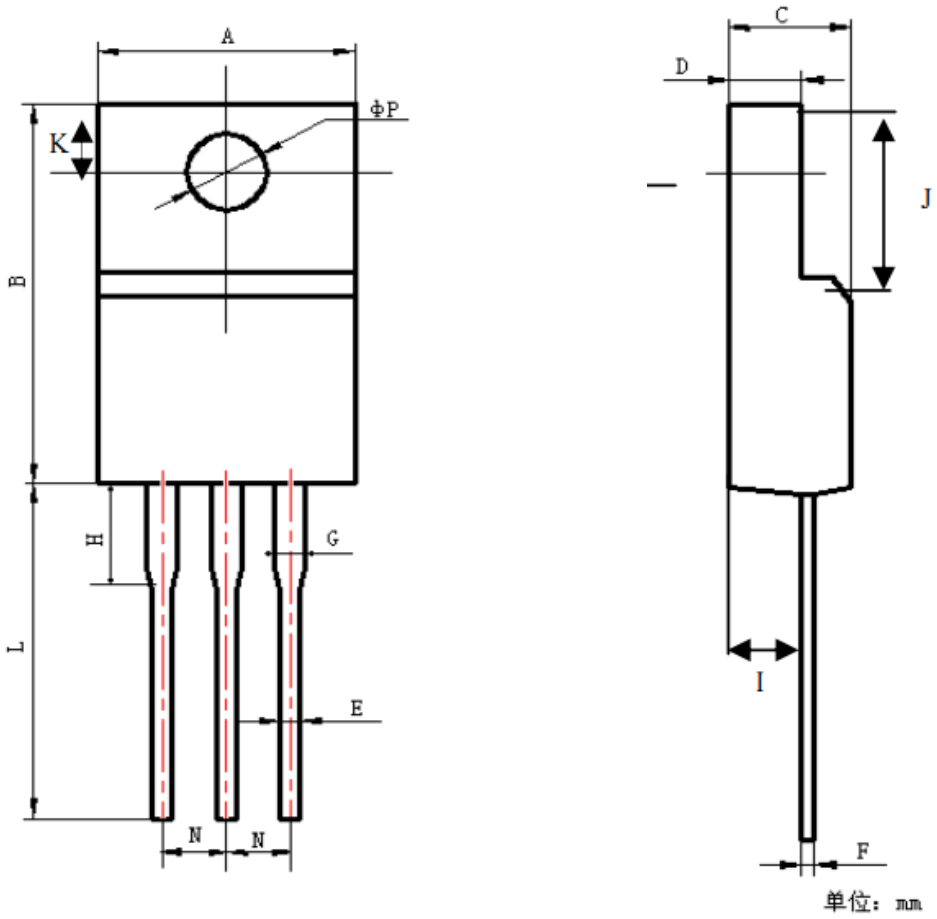
①Calculated continuous current based on maximum allowable junction temperature.

②Repetitive rating; pulse width limited by max. junction temperature.

③The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

④The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C

Mechanical Data：



Item	Spec.（mm）	
	MIN	MAX
A	9.70	10.46
B	15.00	16.27
C	4.28	4.90
D	2.34	2.98
E	0.70	0.92
F	0.40	0.62
G	0.97	1.55
H	2.80	3.80
I	2.15	3.15
J	6.40	7.08
K	2.90	3.70
L	12.58	13.6
N	2.34	2.74
ΦP	3.00	3.45

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