Main Product Characteristics:

V_{DSS}	-40V
R_{DS}(on)	15mΩ(typ.)
I_D	-40A

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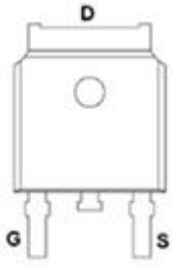
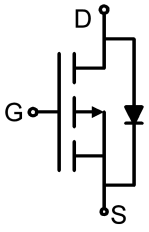


Pin Assignments



Schematic Diagram

Features and Benefits:

- Advanced 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
- 100% Avalanche Rated

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 @ T_C = 25℃	Continuous Drain Current, V_{GS} @ 10V①	-40	A
I_D @ T_C = 100℃	Continuous Drain Current, V_{GS} @ 10V①	-23	
I_{DM}	Pulsed Drain Current②	-120	
P_D @T_C = 25℃	Power Dissipation③	25	W
P_D @T_A = 25℃	Power Dissipation③	16	
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.1mH	125	mJ
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	℃

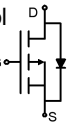
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case③	—	5	℃/W
$R_{\theta JA}$	Junction-to-ambient ($t \leqslant 10s$)④	—	62	℃/W

Electrical Characterizes@T_A=25℃unless otherwise specified

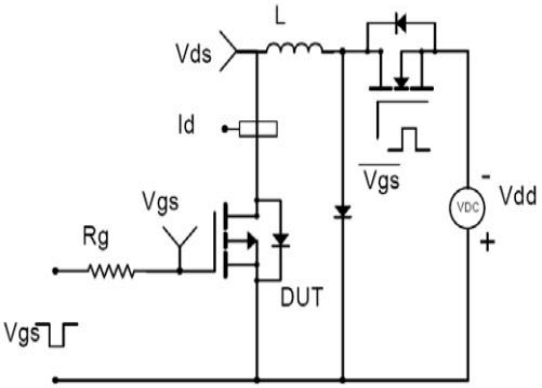
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-40	—	—	V	V_{GS} = 0V, I_D =- 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	15	18	mΩ	V_{GS}=-10V,I_D = -30A
		—	18	25	mΩ	V_{GS}=-4.5V,I_D = -20A
$V_{GS(th)}$	Gate threshold voltage	-1	—	-2.5	V	V_{DS} = V_{GS}, I_D = -250μA
I_{DSS}	Drain-to-Source leakage current	—	—	-1	μA	V_{DS} = -40V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	25	—	nC	I_D = -12A,
Q_{gs}	Gate-to-Source charge	—	11	—		V_{DS}=-20V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	9.5	—		V_{GS} = -4.5V
$t_{d(on)}$	Turn-on delay time	—	47	—	ns	V_{GEN}=-10V, V_{DD}=-15V,
t_r	Rise time	—	23	—		R_{GEN}=6Ω
$t_{d(off)}$	Turn-Off delay time	—	86	—		R_L=15Ω
t_f	Fall time	—	9.2	—		I_D = -1A
C_{iss}	Input capacitance	—	2760	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	259	—		V_{DS} =-20V
C_{rss}	Reverse transfer capacitance	—	83	—		f =1MHz

Source-Drain Ratings and Characteristics

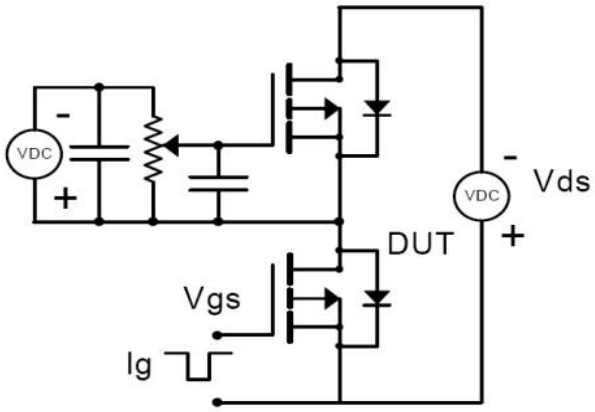
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	-40	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	-90	A	
V_{SD}	Diode Forward Voltage	—	—	-1.3	V	I_S=-1A, V_{GS}=0V

Test circuits and Waveforms

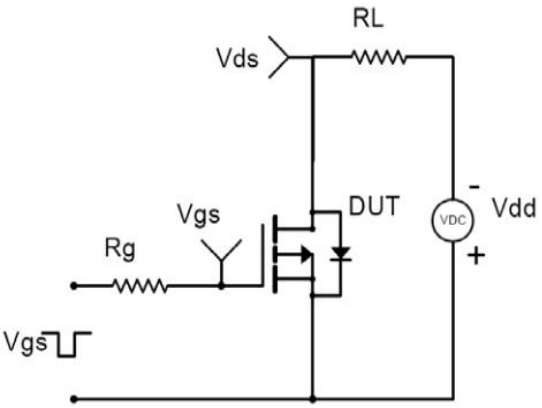
EAS Test Circuit:



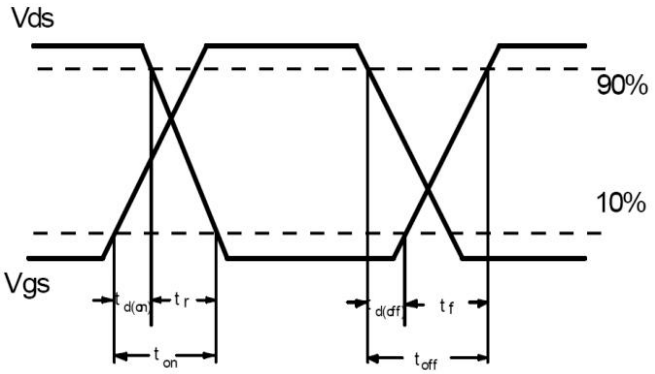
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

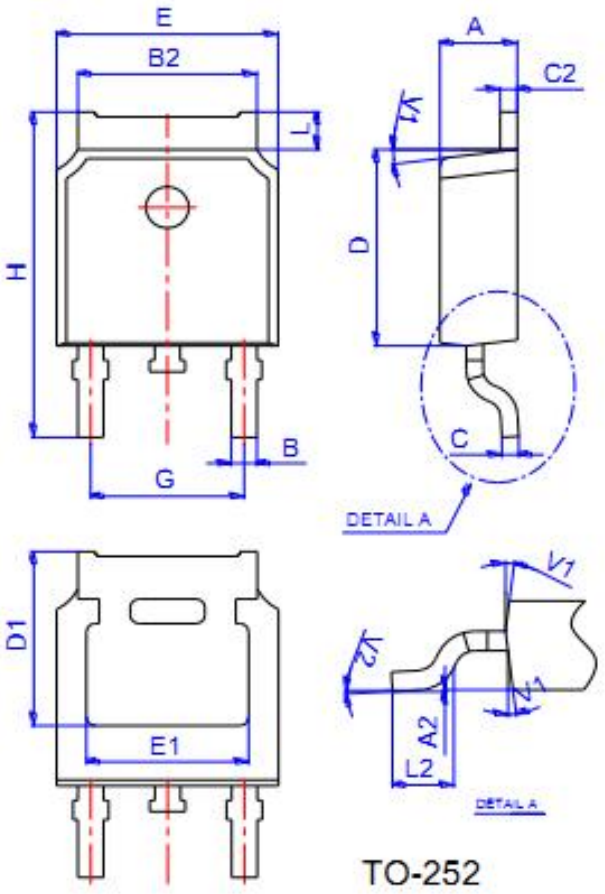
①Calculated continuous current based on maximum allowable junction temperature.

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 T_A =25°C

Mechanical Data：



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Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

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