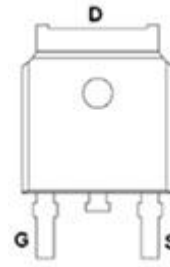
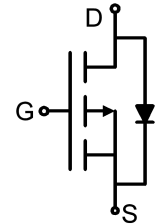


Main Product Characteristics:

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


TO-252

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, $V_{GS} @ 10V$	-40	A
$I_D @ T_C = 100$	Continuous Drain Current, $V_{GS} @ 10V$	-23	
I_{DM}	Pulsed Drain Current	-120	
$P_D @ T_C = 25$	Power Dissipation	25	W
$P_D @ T_A = 25$	Power Dissipation	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
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to + 150	

Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
R_{JC}	Junction-to-case	—	5	/W
R_{JA}	Junction-to-ambient ()	—	62	/W

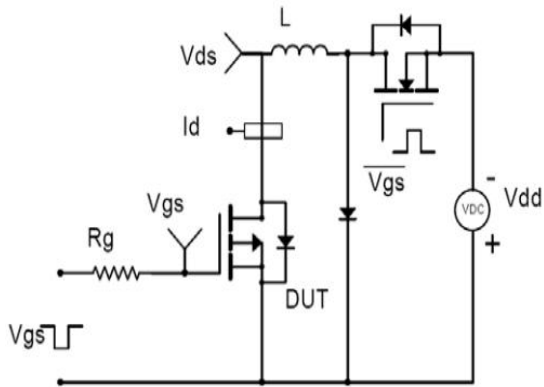
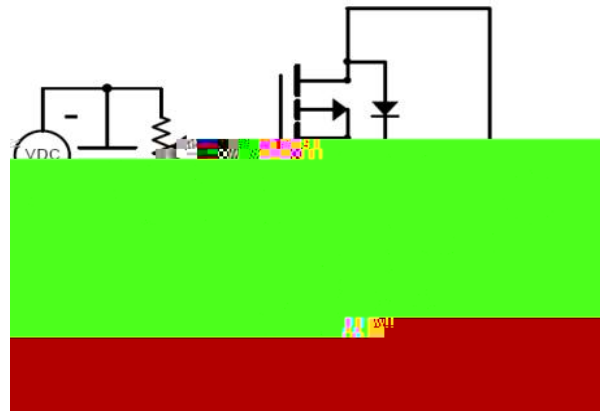
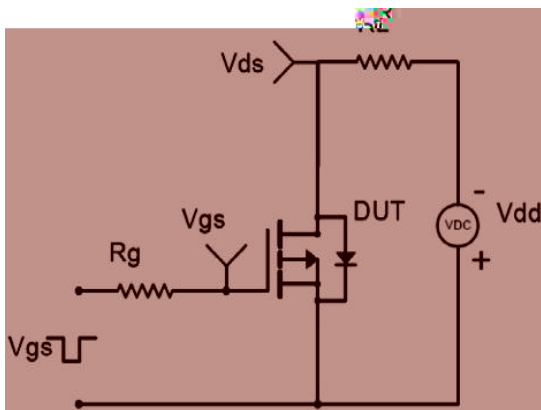
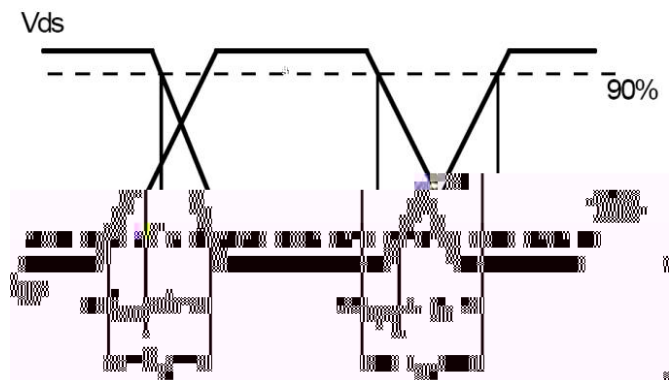
Electrical Characterizes @ $T_A=25$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-40	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	15	18	m	$V_{GS} = -10V, I_D = -30A$
		—	18	25	m	$V_{GS} = -4.5V, I_D = -20A$
$V_{GS(th)}$	Gate threshold voltage	-1	—	-2.5	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
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	$I_D = -12A,$ $V_{DS} = -20V,$ $V_{GS} = -4.5V$
Q_{gs}	Gate-to-Source charge	—	11	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	9.5	—		
$t_{d(on)}$	Turn-on delay time	—	47	—	ns	$V_{GEN} = -10V, V_{DD} = -15V,$ $R_{GEN} = 6$ $R_L = 15$ $I_D = -1A$
t_r	Rise time	—	23	—		
$t_{d(off)}$	Turn-Off delay time	—	86	—		
t_f	Fall time	—	9.2	—		
C_{iss}	Input capacitance	—	2760	—	pF	$V_{GS} = 0V$
C_{oss}	Output capacitance	—	259	—		$V_{DS} = -20V$
C_{riss}	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)	—	—	-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:


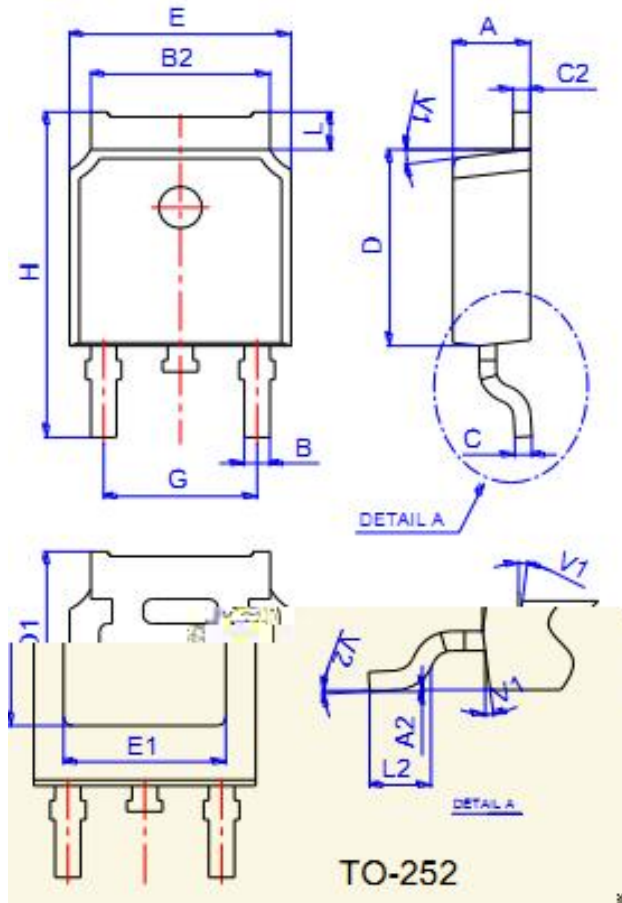
Notes:

Calculated continuous current based on maximum allowable junction temperature.

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

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

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

Mechanical Data


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.1
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	2.50		10.70	0.1		0.425
L	1.39		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		

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