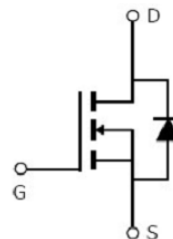


Main Product Characteristics:

V_{DSS}	30V
$R_{DS(on)}$	2.5m Ω (typ.)
I_D	150A


TO-220

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
- 150°C operating temperature


Description:

It utilizes the latest 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
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$ ①	150	A
$I_D @ T_C = 100^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$ ①	95	
I_{DM}	Pulsed Drain Current ②	600	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation ③	125	W
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 20	V
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

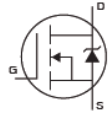
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	1	$^{\circ}\text{C}/\text{W}$

Electrical Characterizes @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

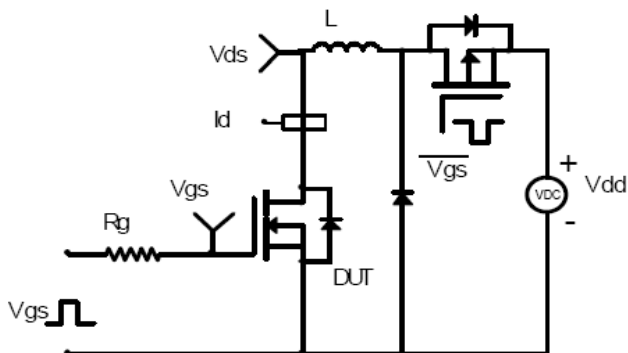
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	30	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	2.5	3.3	m Ω	$V_{GS}=10\text{V}, I_D = 20\text{A}$
		—	3.6	4.7		$V_{GS}=4.5\text{V}, I_D = 10\text{A}$
$V_{GS(th)}$	Gate threshold voltage	1	—	2.2	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 20\text{V}$
		—	—	-100		$V_{GS} = -20\text{V}$
C_{iss}	Input capacitance	—	3800	—	pF	$V_{GS} = 0\text{V}$
C_{oss}	Output capacitance	—	440	—		$V_{DS} = 15\text{V}$
C_{rss}	Reverse transfer capacitance	—	330	—		$f = 1\text{MHz}$
Q_g	Total gate charge	—	65	—	nC	$I_D = 15\text{A},$
Q_{gs}	Gate-to-Source charge	—	10	—		$V_{DS}=15\text{V},$
Q_{gd}	Gate-to-Drain("Miller") charge	—	20	—		$V_{GS} = 10\text{V}$
$t_{d(on)}$	Turn-on delay time	—	10	—	ns	$V_{GS}=10\text{V}, V_{DS} = 15\text{V},$ $R_{GEN}=3\Omega, I_D = 30\text{A}$
t_r	Rise time	—	20	—		
$t_{d(off)}$	Turn-Off delay time	—	50	—		
t_f	Fall time	—	20	—		

Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	150	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	600	A	
V_{SD}	Diode Forward Voltage	—	—	1.2	V	$I_S=30\text{A}, V_{GS}=0\text{V}$
t_{rr}	Reverse Recovery Time	—	18	—	ns	$T_J = 25^{\circ}\text{C}, I_F = 20\text{A}, di/dt =$
Q_{rr}	Reverse Recovery Charge	—	6	—	nC	100A/ μs

Test Circuits and Waveforms

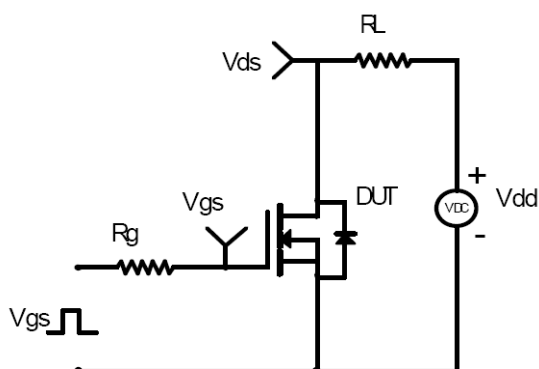
EAS Test Circuit:



Gate Charge Test Circuit:



Switching Time Test Circuit:



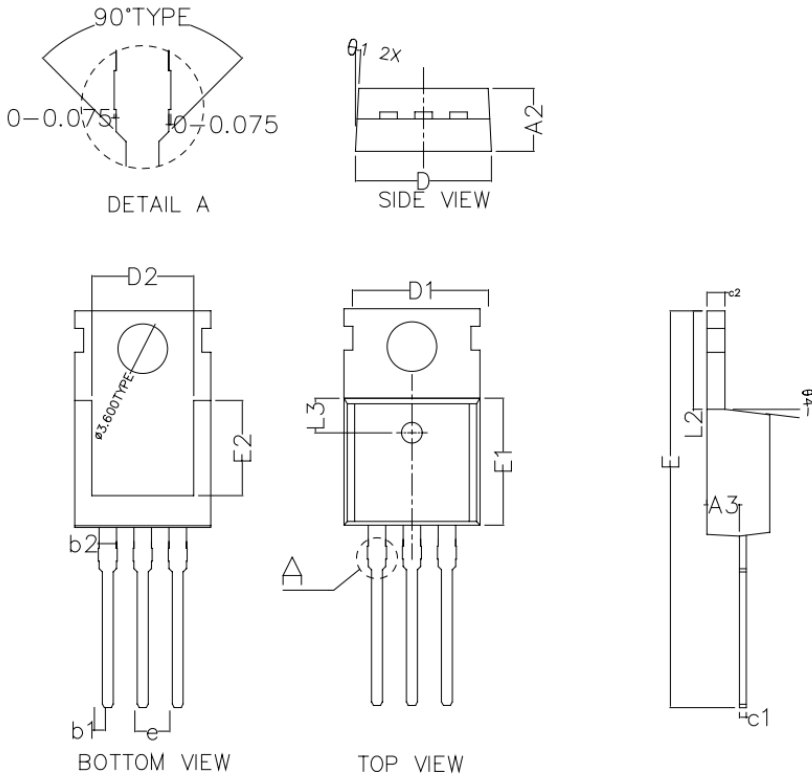
Switching Waveforms:



Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

Mechanical Data:



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A2	4.470	4.570	4.670
A3	2.300	2.350	2.400
b1	0.750	0.800	0.850
b2	1.27 TYPE		
c1	0.450	0.500	0.550
c2	1.250	1.300	1.380
▲ D	9.900	10.000	10.100
▲ D1	10.000TYPE		
▲ D2	8.000TYPE		
▲ E	28.660	28.860	29.060
▲ E1	9.000	9.100	9.200
▲ E2	7.000TYPE		
e	2.540TYPE		
L2	6.350	6.500	6.650
L3	2.50TYPE		
θ1	3° TYPE		
θ2	3° TYPE		
θ3	7° TYPE		
θ4	7° TYPE		

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