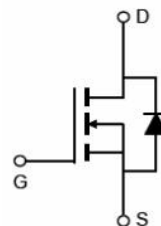


Main Product Characteristics:

V_{DSS}	100V
$R_{DS(on)}$	4.2m Ω (typ.)
I_D	127A



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, $V_{GS} @ 10\text{V}^{\text{①}}$	127	A
$I_D @ T_C = 100^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}^{\text{①}}$	90	
I_{DM}	Pulsed Drain Current ^②	508	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation ^③	214	W
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-to-Source Voltage	± 20	V
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

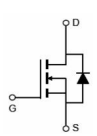
Thermal Resistance

Symbol	Characteristics	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	0.7	$^{\circ}\text{C}/\text{W}$

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

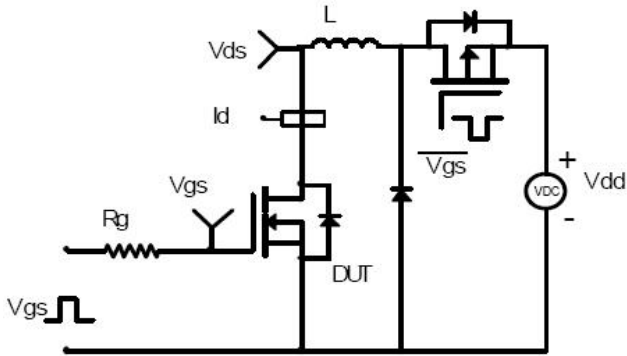
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	100	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	4.2	5.5	m Ω	$V_{GS}=10\text{V}, I_D=30\text{A}$
$V_{GS(th)}$	Gate threshold voltage	2	—	4	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
I_{DSS}	Drain-to-Source leakage current $T_j=25^{\circ}\text{C}$	—	—	1	μA	$V_{DS}=100\text{V}, V_{GS}=0\text{V}$,
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS}=20\text{V}, V_{DS}=0\text{V}$
		—	—	-100		$V_{GS}=-20\text{V}, V_{DS}=0\text{V}$
g_{fs}	Transconductance	—	21	—	S	$V_{DS}=10\text{V}, I_D=15\text{A}$
Q_g	Total gate charge	—	94	—	nC	$T_j=25^{\circ}\text{C}, V_{GS}=10\text{V}, V_{DS}=50\text{V}, I_D=20\text{A}$
Q_{gs}	Gate-to-Source charge	—	36	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	22	—		
$t_{d(on)}$	Turn-on delay time	—	35	—	ns	$V_{GS}=10\text{V}$ $V_{DS}=50\text{V}$ $R_G=6\Omega$ $R_L=2.5\Omega$
t_r	Rise time	—	30	—		
$t_{d(off)}$	Turn-Off delay time	—	57	—		
t_f	Fall time	—	23	—		
C_{iss}	Input capacitance	—	7455	—	pF	$V_{GS}=0\text{V}$ $V_{DS}=50\text{V}$ $f=1\text{MHz}$
C_{oss}	Output capacitance	—	1665	—		
C_{rss}	Reverse transfer capacitance	—	150	—		

Source-Drain Ratings and Characteristics

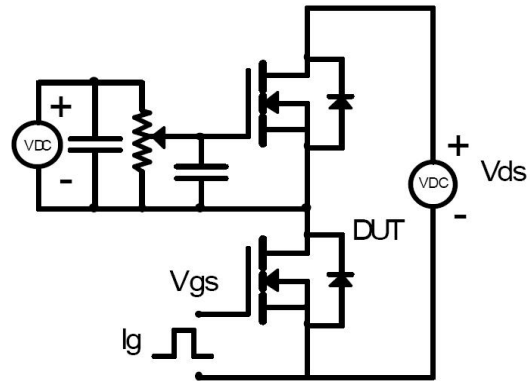
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	127	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	508	A	
V_{SD}	Diode Forward Voltage	—	—	1.2	V	$I_S=20\text{A}, V_{GS}=0\text{V}$
t_{rr}	Reverse Recovery Time	—	63	—	ns	$I_F=20\text{A}, di/dt=500\text{A}/\mu\text{s}$
Q_{rr}	Reverse Recovery Charge	—	80	—	nC	

Test Circuits and Waveforms

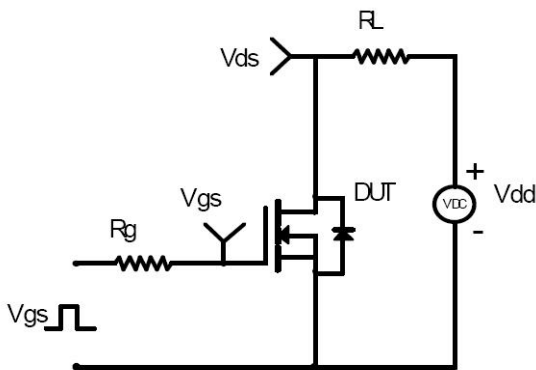
EAS Test Circuit:



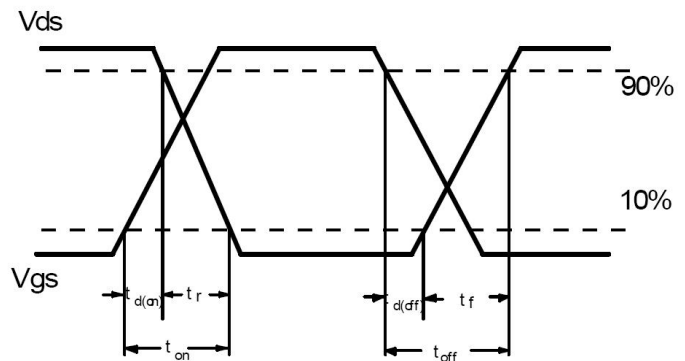
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:

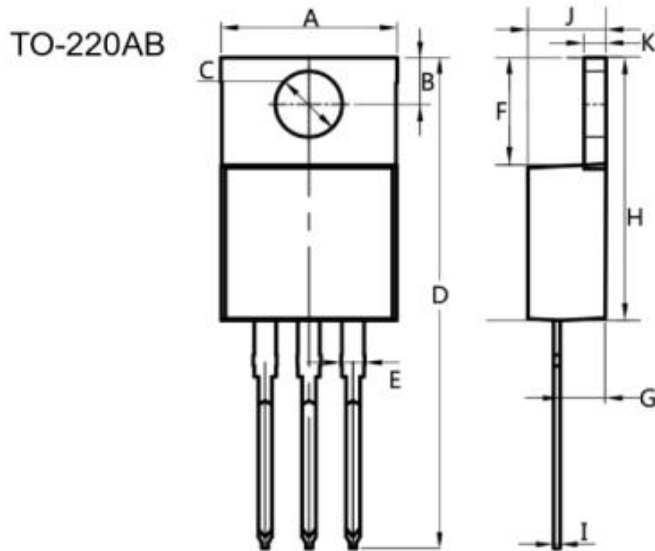


Notes:

- 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:

Unit:mm



Dim.	Min.	Max.
A	10.0	10.4
B	2.5	3.0
C	3.5	4.0
D	28.0	30.0
E	1.1	1.5
F	6.2	6.6
G	2.9	3.3
H	15.0	16.0
I	0.35	0.45
J	4.3	4.7
K	1.2	1.4
All Dimensions in millimeter		

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