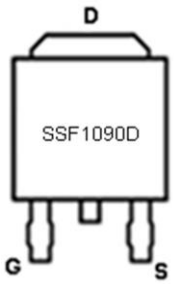
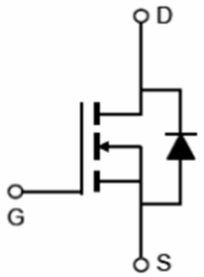
Main Product Characteristics:

V_{DSS}	100V
R_{DS}(on)	90mΩ(typ.)
I_D	10A

TO-252 (DPAK)



Marking and 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
- 150℃ 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°C	Continuous Drain Current, V_{GS} @ 10V①	10	A
I_{DM}	Pulsed Drain Current②	40	
P_D @T_C = 25°C	Power Dissipation③	24	W
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=22mH	77	mJ
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

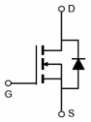
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case③	—	6.3	℃/W

Electrical Characterizes@T_A=25℃unless otherwise specified

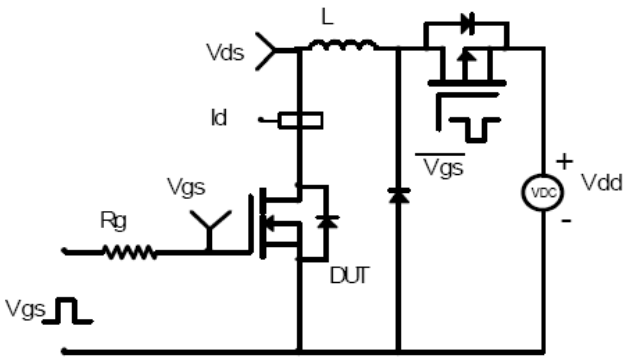
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	100	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	90	110	mΩ	V_{GS}=10V,I_D =5A
		—	95	140		V_{GS}=4.5V,I_D =3A
$V_{GS(th)}$	Gate threshold voltage	1	—	2.5	V	V_{DS}=V_{GS}, I_D =250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS}=100V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	10	—	nC	I_D = 5A,
Q_{gs}	Gate-to-Source charge	—	2	—		V_{DS}=30V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	2.2	—		V_{GS} = 10V
$t_{d(on)}$	Turn-on delay time	—	7.4	—	ns	V_{GS}=10V, V_{DS}=30V, R_{GEN}=3Ω I_D = 10A
t_r	Rise time	—	10	—		
$t_{d(off)}$	Turn-Off delay time	—	22	—		
t_f	Fall time	—	2.8	—		
C_{iss}	Input capacitance	—	825	—	pF	V_{GS} = 0V V_{DS} = 50V f = 1MHz
C_{oss}	Output capacitance	—	30	—		
C_{rss}	Reverse transfercapacitance	—	23	—		

Source-Drain Ratings and Characteristics

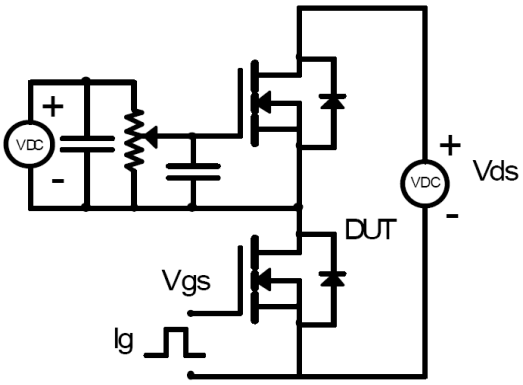
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	10	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	40	A	
V_{sd}	Diode Forward Voltage	—	—	1.2	V	I_S=3A, V_{GS}=0V
t_{rr}	Reverse Recovery Time	—	20	—	ns	I_S=10A,di/dt=100A/us
Q_{rr}	Reverse Recovery Charge	—	20	—	nC	

Test Circuits and Waveforms

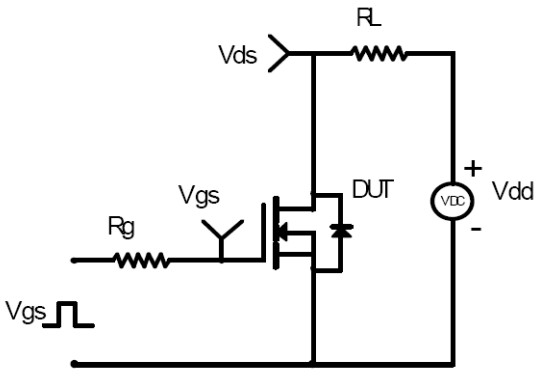
EAS Test Circuit:



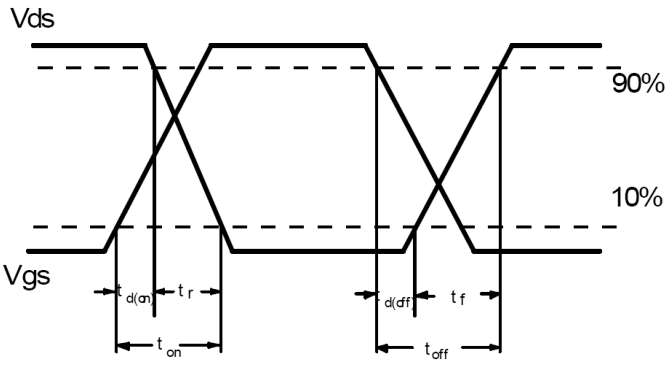
Gate Charge Test Circuit:



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.

Typical Electrical and Thermal Characteristics

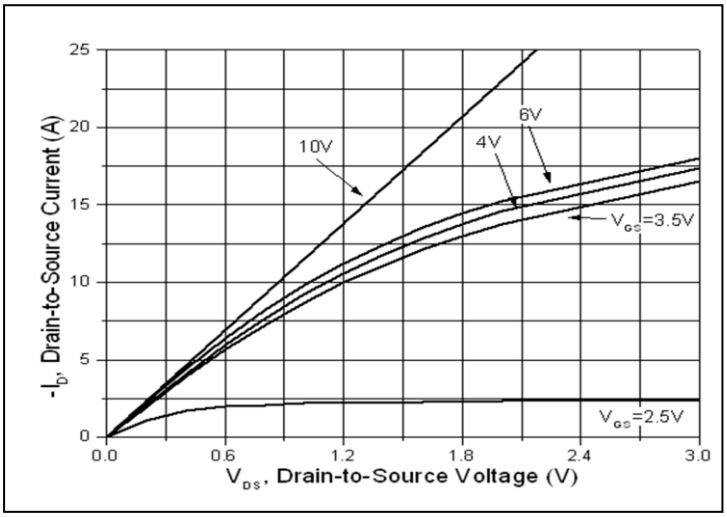


Figure1.Typical Output Characteristics

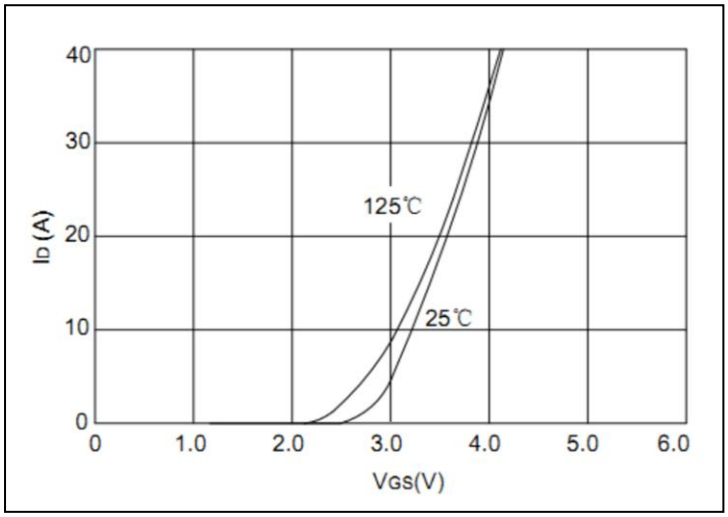


Figure2.Transfer Characteristics

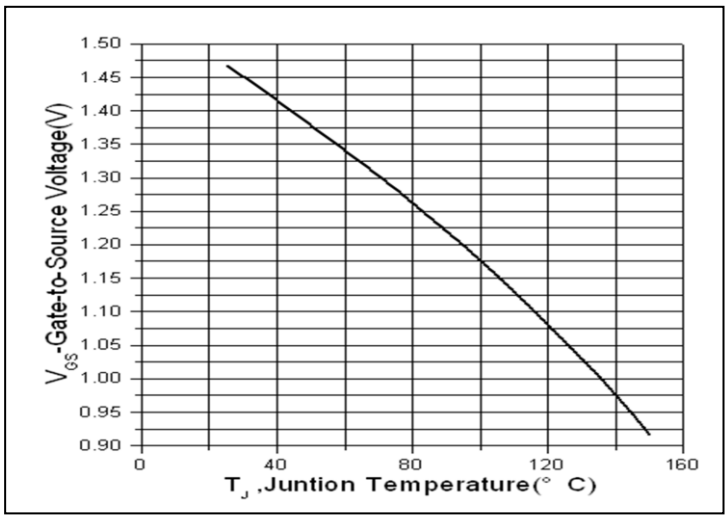


Figure3.Gate to Source Cut-off Voltage

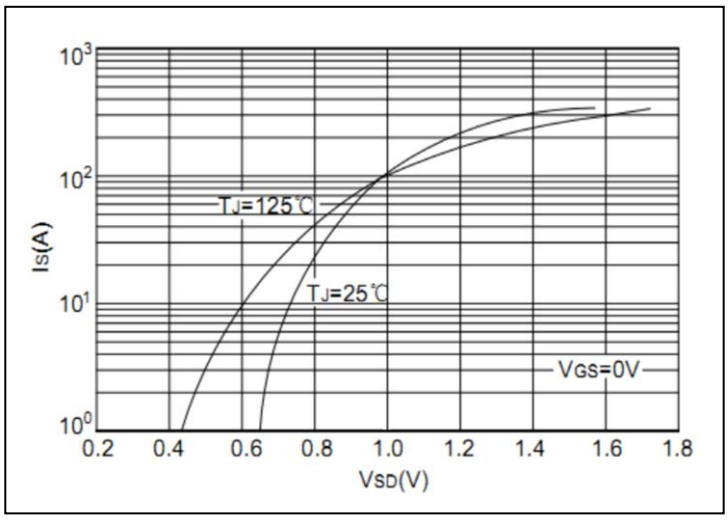


Figure4.Body Diode Characteristics

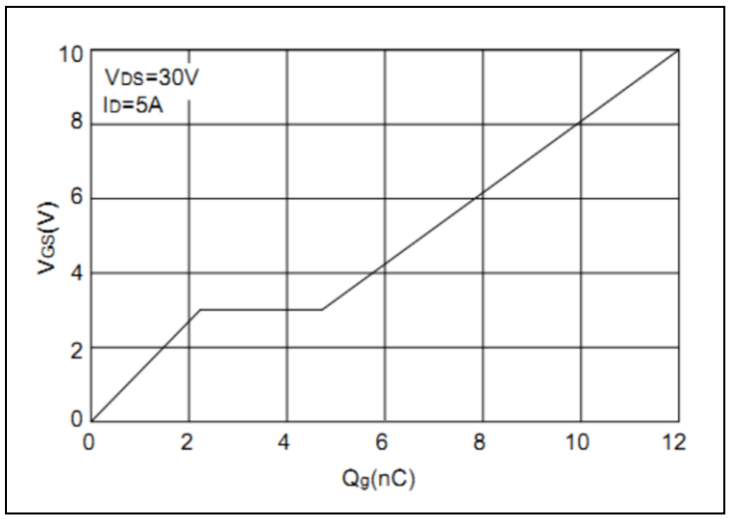


Figure5.Gate Charge

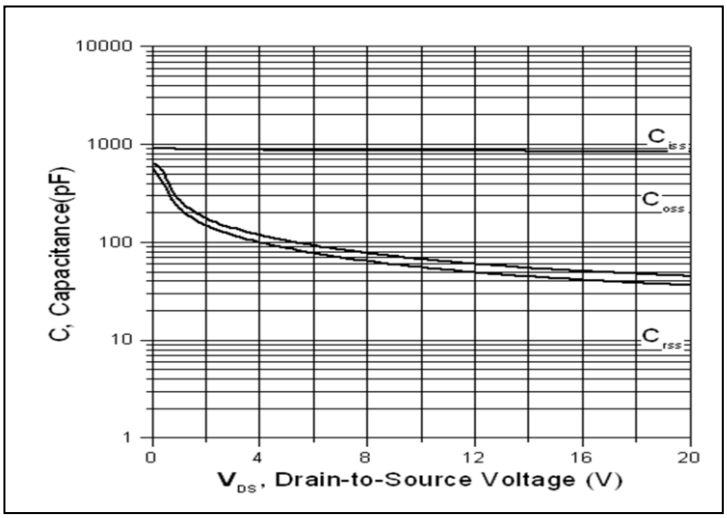


Figure6.Capacitance

Typical Electrical and Thermal Characteristics

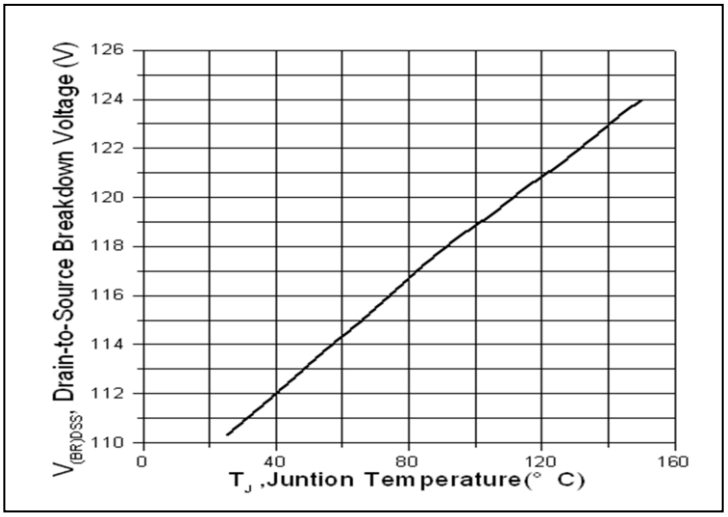


Figure7.Drain-to-Source Breakdown Voltage vs. Junction Temperature

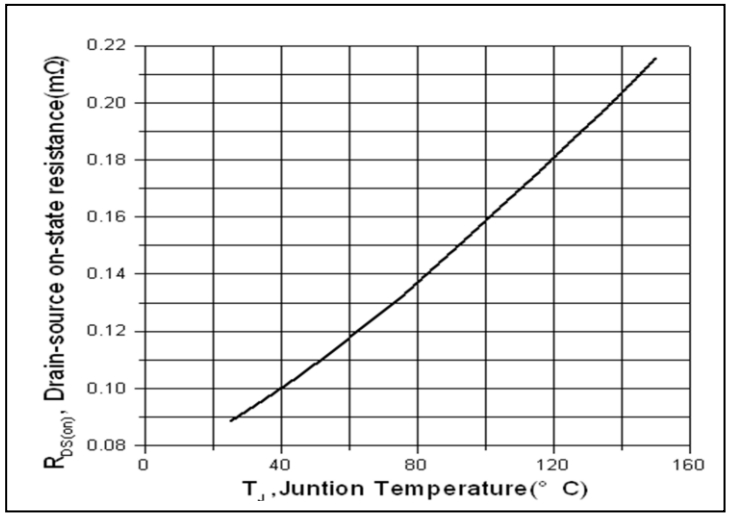


Figure8.Normalized On-Resistance vs. Junction Temperature

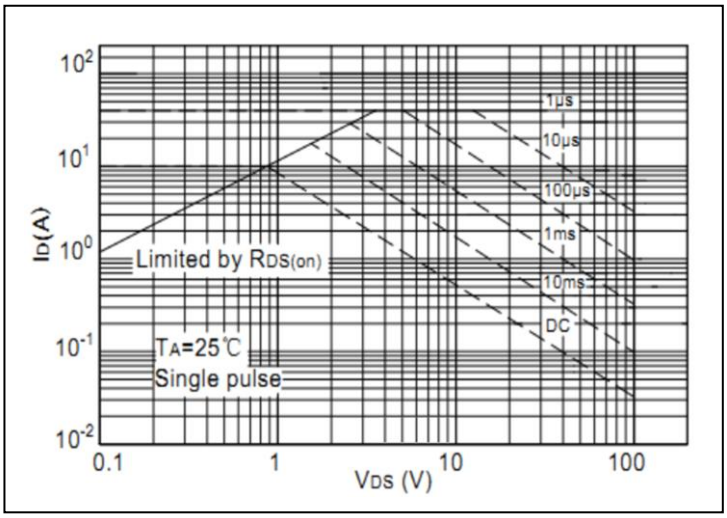


Figure9.Safe Operating Area

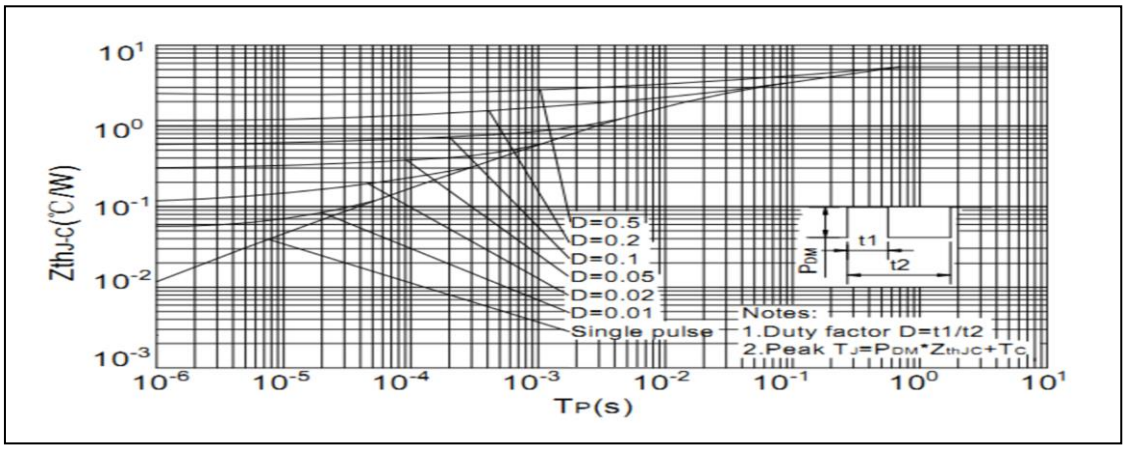
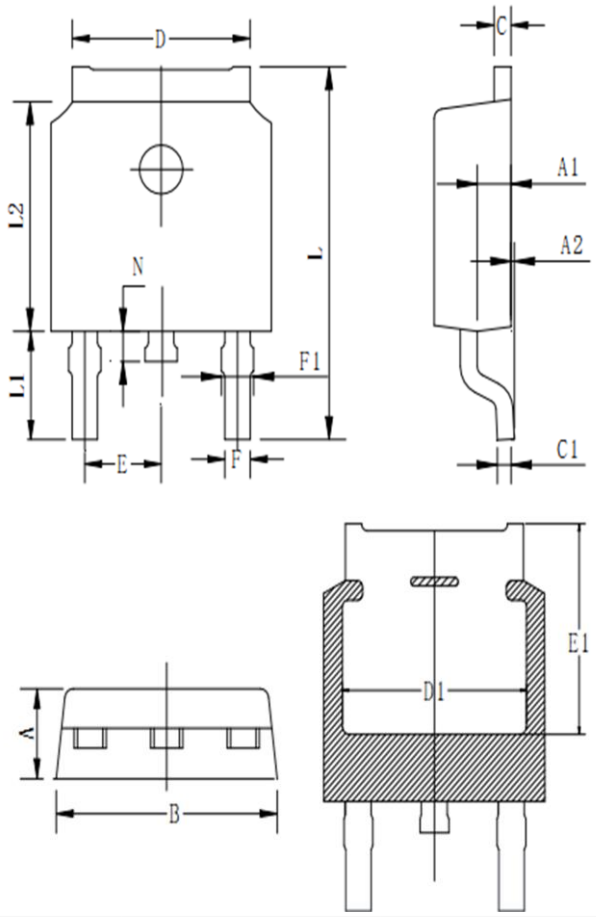


Figure10.Normalized Maximum Transient Thermal Impedance

Mechanical Data：

TO-252 Package Outline(Unit:mm)



Symbol	Min	Typ	Max
A	2.20	2.30	2.40
A1	0.91	1.01	1.11
A2			0.25
B	6.50	6.60	6.70
C	0.40	0.50	0.60
C1	0.40	0.50	0.60
D	5.15	5.30	5.45
D1	5.10	5.25	5.40
E	2.20	2.29	2.40
E1	4.95	5.15	5.35
F	0.66	0.76	0.86
F1	0.70	0.82	0.95
L	9.70	9.90	10.10
L1	2.67	2.87	3.07
L2	6.00	6.10	6.20
N	0.60	0.80	1.00

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