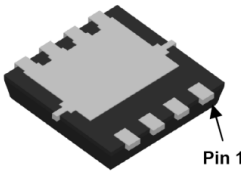
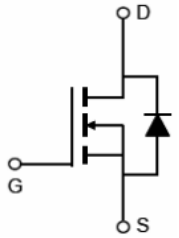
Main Product Characteristics:

V_{DSS}	30V
R_{DS}(on)	3.2mΩ (typ.)
I_D	35A



PRPAK 3*3



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 @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	35	A
I_{DM}	Pulsed Drain Current ②	120	
P_D @TC = 25°C	Power Dissipation ③	27	W
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy	80	mJ
I_{AS}	Avalanche Current	40	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

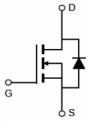
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	4.5	℃/W
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	60	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

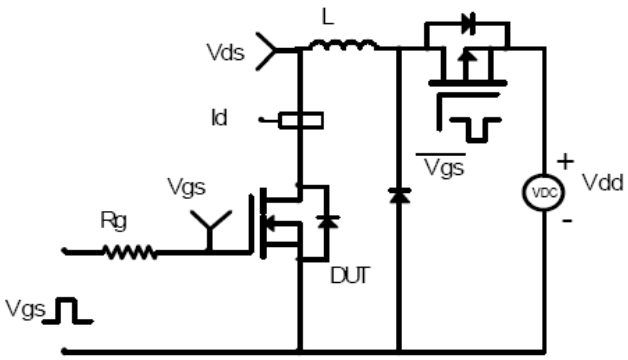
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	30	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	3.2	3.9	mΩ	V_{GS}=10V,I_D =20A
		—	4.9	6.1		V_{GS}=4.5V,I_D =15A
$V_{GS(th)}$	Gate threshold voltage	1.2	—	2.2	V	V_{DS} = V_{GS}, I_D =250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =30V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	15	—	nC	I_D = 20A,
Q_{gs}	Gate-to-Source charge	—	6	—		V_{DS}=15V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	4	—		V_{GS} = 4.5V
$t_{d(on)}$	Turn-on delay time	—	8	—	ns	V_{GS}=10V, V_{DS}=15V, R_{GEN}=3Ω I_D = 20A
t_r	Rise time	—	20	—		
$t_{d(off)}$	Turn-Off delay time	—	22	—		
t_f	Fall time	—	5	—		
C_{iss}	Input capacitance	—	1480	—	pF	V_{GS} = 0V V_{DS} = 15V f = 1MHz
C_{oss}	Output capacitance	—	560	—		
C_{rss}	Reverse transfer capacitance	—	70	—		

Source-Drain Ratings and Characteristics

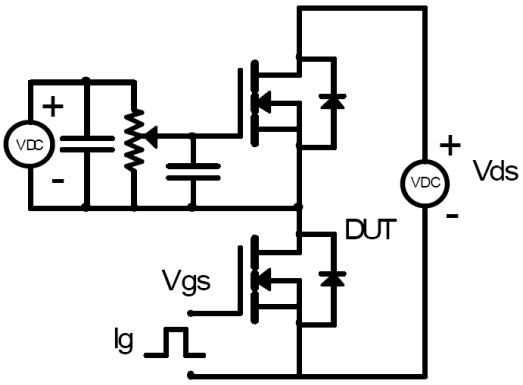
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	30	A	MOSFET symbol showing the integral reverse p-n junction diode. 
V_{sd}	Diode Forward Voltage	—	—	1	V	I_S=1A, V_{GS}=0V

Test circuits and Waveforms

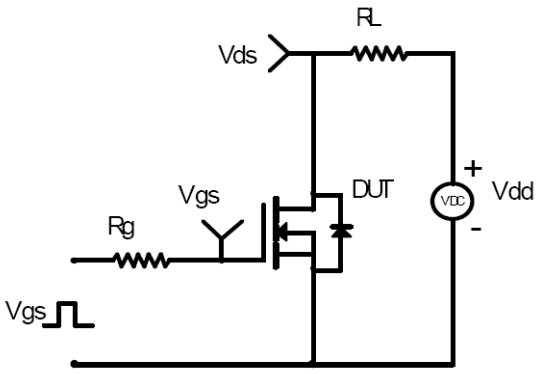
EAS Test Circuit:



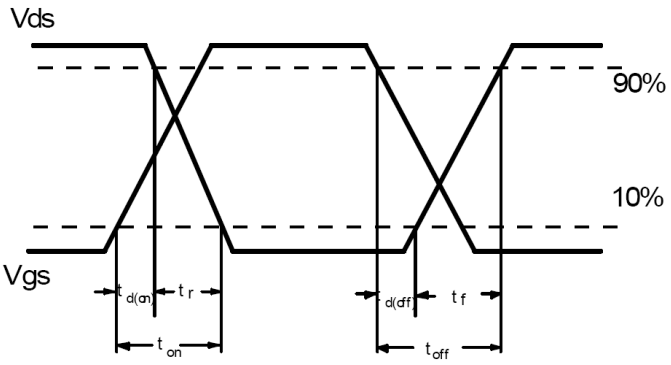
Gate charge test circuit:



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 TA =25°C

Typical electrical and thermal characteristics

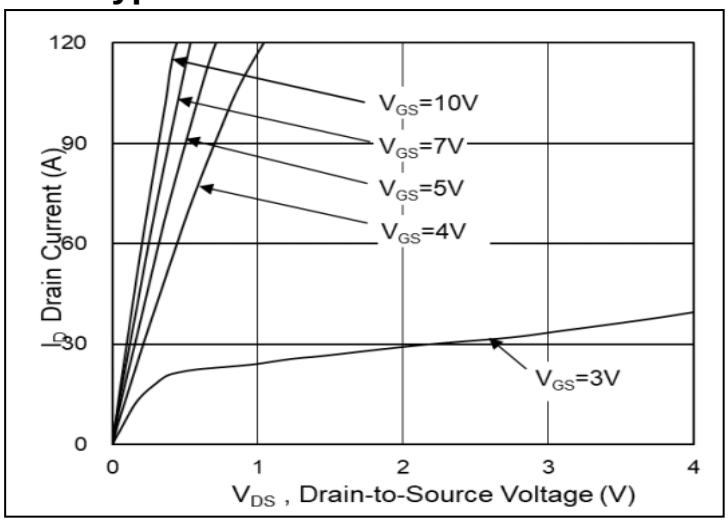


Figure 1: Typical Output Characteristics

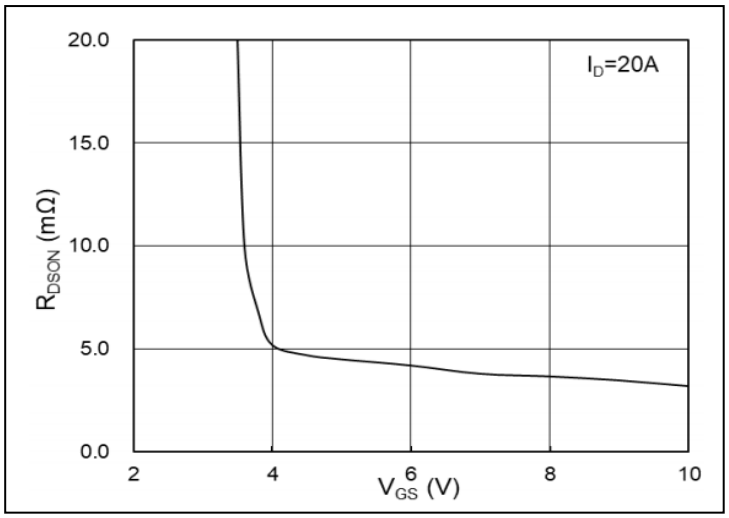


Figure 2: On-Resistance Vs. G-S Voltage

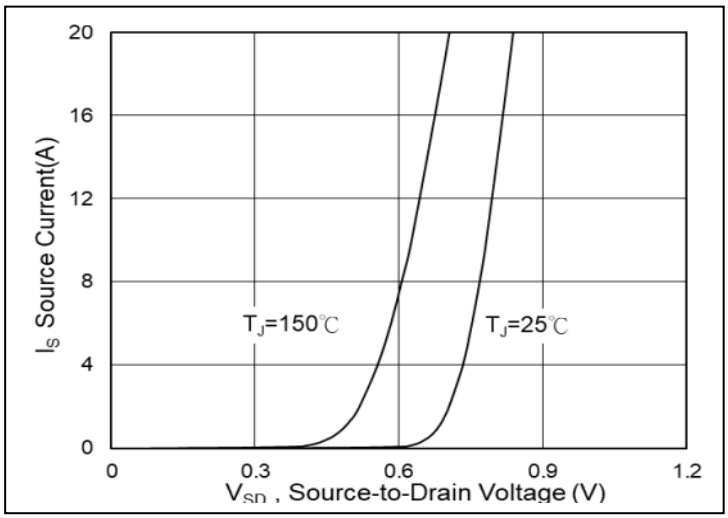


Figure 3:Source Drain Forward Characteristics

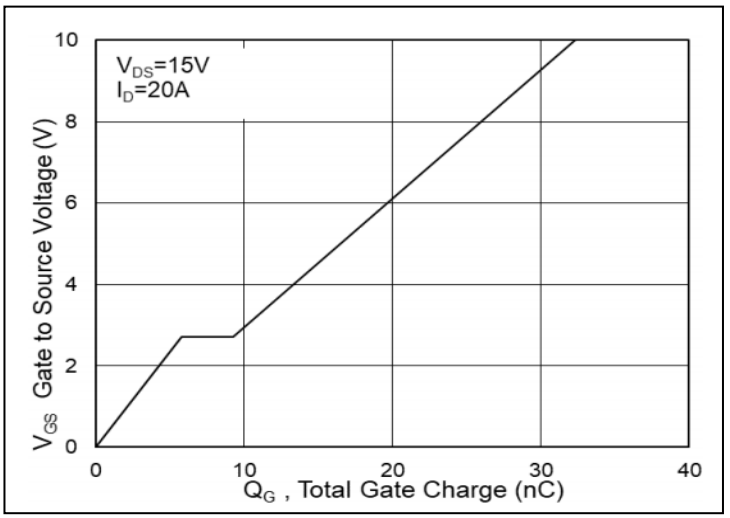


Figure 4: Gate Charge

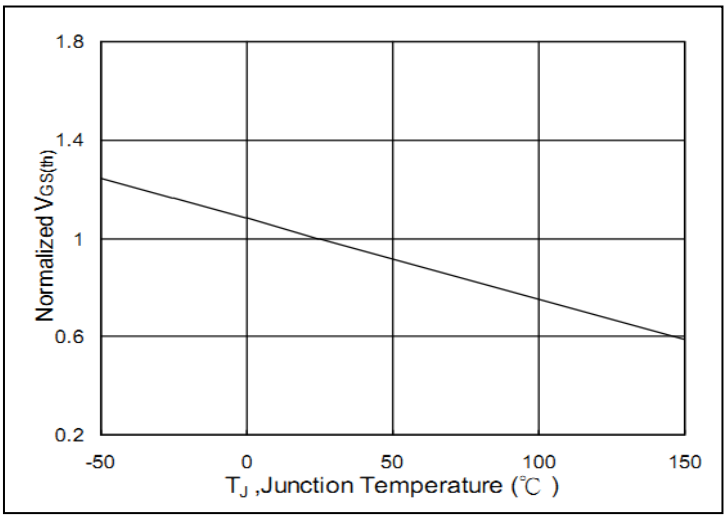


Figure 5: Gate to source cut-off voltage

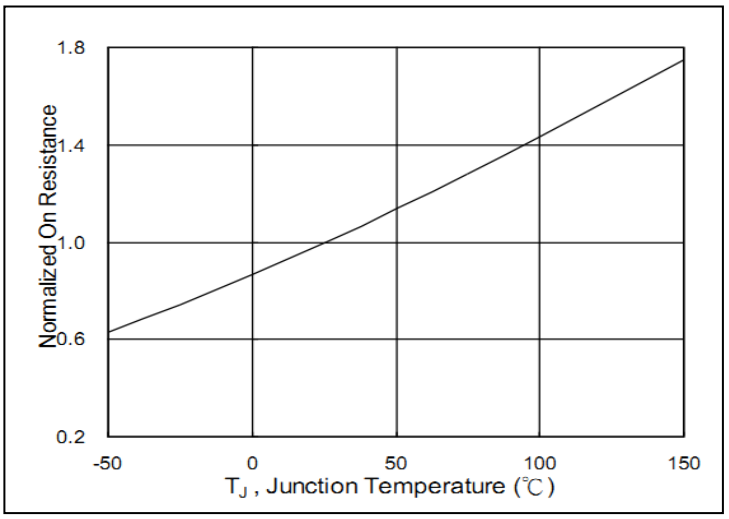


Figure 6: Normalized On-Resistance Vs. Case Temperature

Typical electrical and thermal characteristics

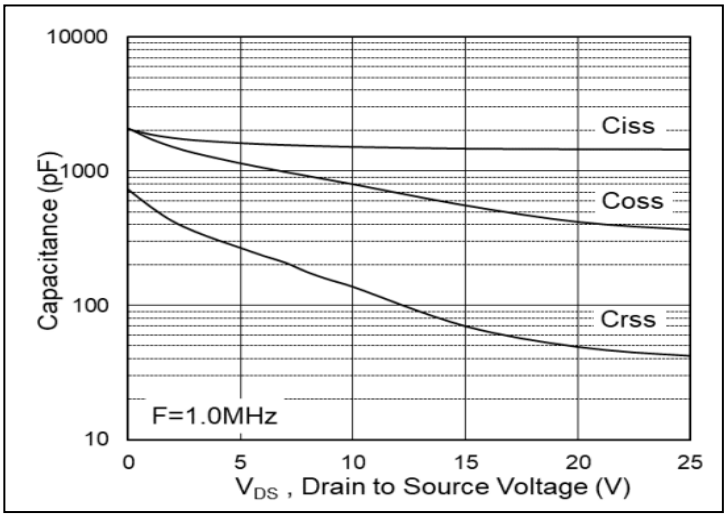


Figure 7: Capacitance

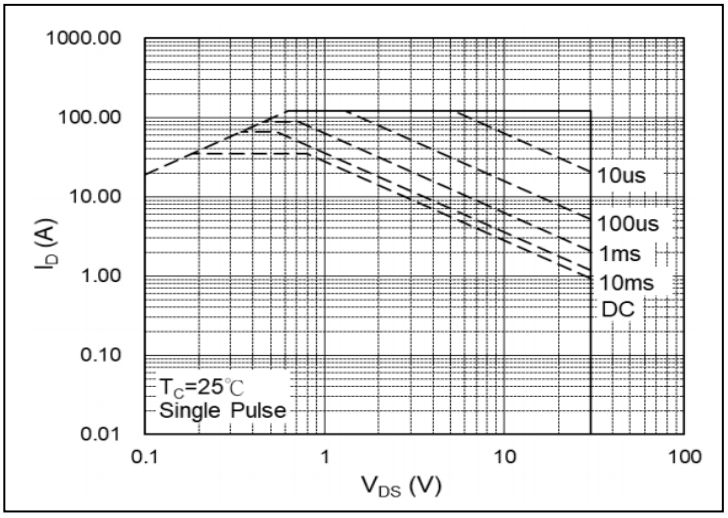


Figure 8: Safe Operation Area

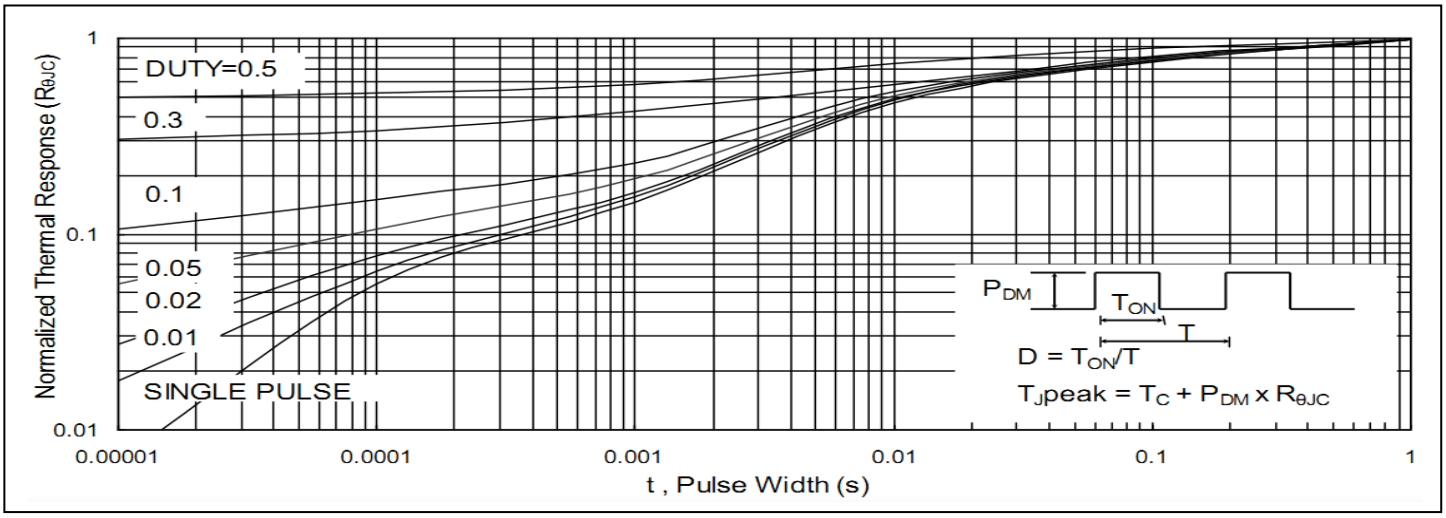
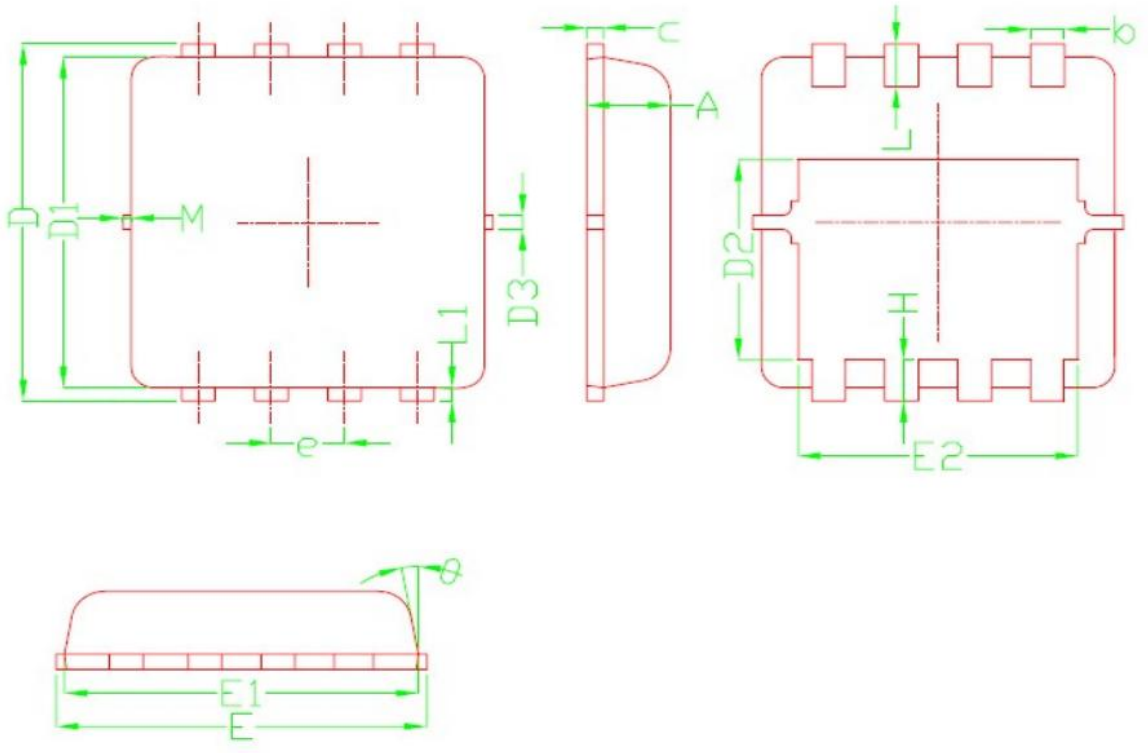


Figure 9: Transient Thermal Impedance

Mechanical Data：



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.85	0.027	0.034
b	0.20	0.40	0.007	0.016
c	0.10	0.25	0.004	0.010
D	3.15	3.45	0.124	0.136
D1	2.90	3.20	0.114	0.126
D2	1.54	1.98	0.060	0.080
D3	0.10	0.30	0.004	0.012
E	3.15	3.45	0.124	0.136
E1	3.00	3.25	0.118	0.128
E2	2.29	2.65	0.090	0.104
e	0.65 BSC		0.025 BSC	
H	0.28	0.65	0.011	0.026
Θ	0°	14°	0°	14°
L	0.30	0.50	0.012	0.020
L1	0.13		0.005	
M	---	0.15	---	0.006

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