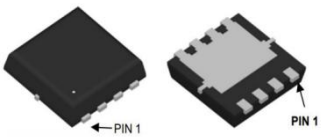
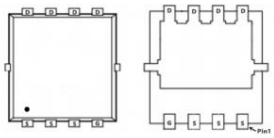
Main Product Characteristics:

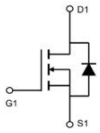
V_{DSS}	40V
R_{DS}(on)	6.9mΩ (typ.)
I_D	68A



PDFN 3*3-8L



Pin Assignments



Schematic Diagram

Main Features

- 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 Rating

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	68	A
I_{DM}	Pulsed Drain Current ②	125	
P_D @TC = 25°C	Power Dissipation ③	1.67	W
E_{AS}	Single Pulse Avalanche Energy @ L=0.1mH	31	mJ
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

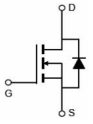
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	30	℃/W
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	85	℃/W

Electrical Characteristics @T_A=25℃ unless otherwise specified

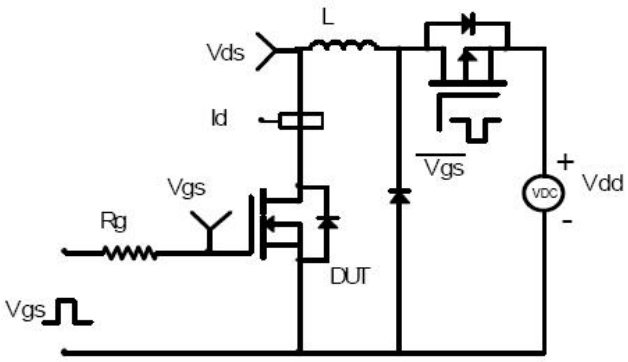
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	40	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	6.9	8.5	mΩ	V_{GS}=10V,I_D =12A
		—	10.5	15		V_{GS}=4.5V,I_D =10A
$V_{GS(th)}$	Gate threshold voltage	1.2	—	2.5	V	V_{DS} = V_{GS}, I_D =250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =32V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	5.8	—	nC	I_D = 12A, V_{DS}=20V, V_{GS} =4.5V
Q_{gs}	Gate-to-Source charge	—	3	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	1.2	—		
$t_{d(on)}$	Turn-on delay time	—	14.3	—	ns	V_{DD}=15V, V_{DS}=10V, R_{GEN}=3.3Ω I_D = 1A
t_r	Rise time	—	5.6	—		
$t_{d(off)}$	Turn-Off delay time	—	20	—		
t_f	Fall time	—	11	—		
C_{iss}	Input capacitance	—	690	—	pF	V_{GS} = 0V V_{DS} = 15V f = 1MHz
C_{oss}	Output capacitance	—	193	—		
C_{rss}	Reverse transfer capacitance	—	38	—		

Source-Drain Ratings and Characteristics

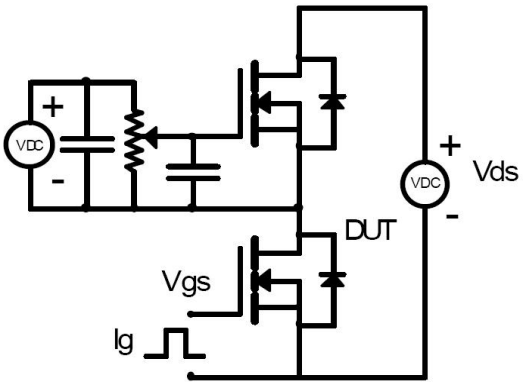
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	30	A	MOSFET symbol showing the integral reverse p-n junction diode. 
V_{SD}	Diode Forward Voltage	—	—	1	V	I_S=1A, V_{GS}=0V

Test circuits and Waveforms

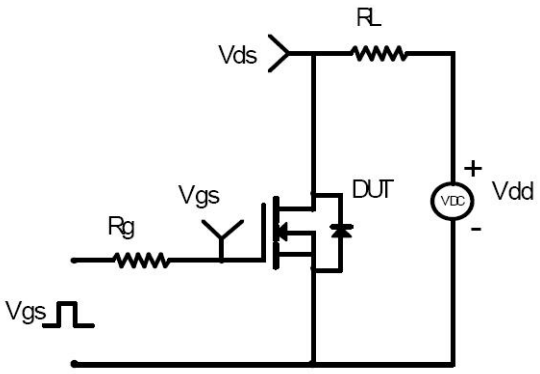
EAS Test Circuit:



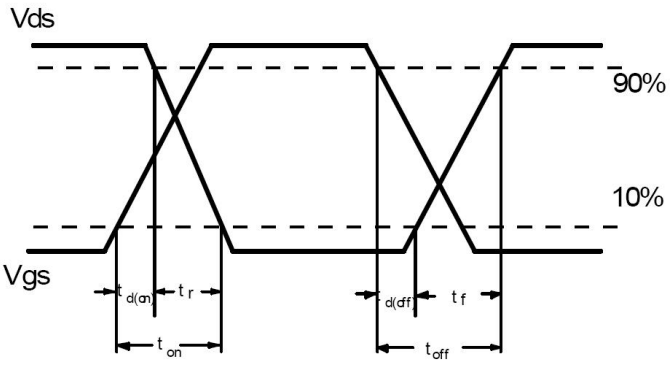
Gate charge test circuit:



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

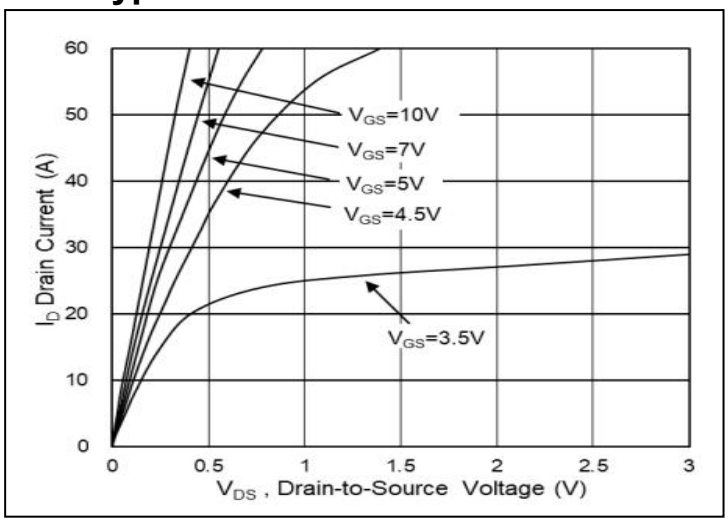


Figure 1.Typ. Output Characteristics

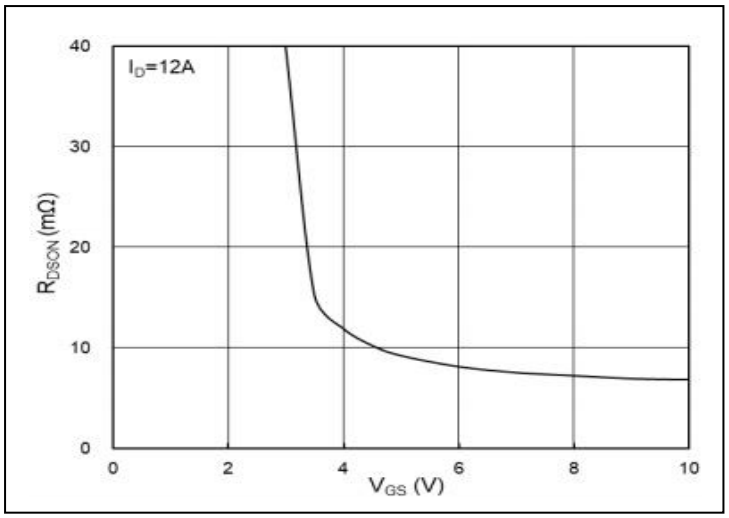


Figure 2. On-Resistance vs.G-S Voltage

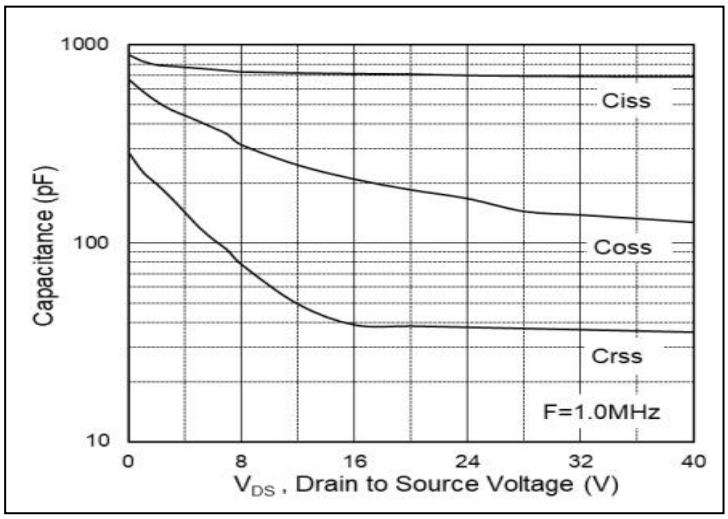


Figure 3. Typ. Capacitance

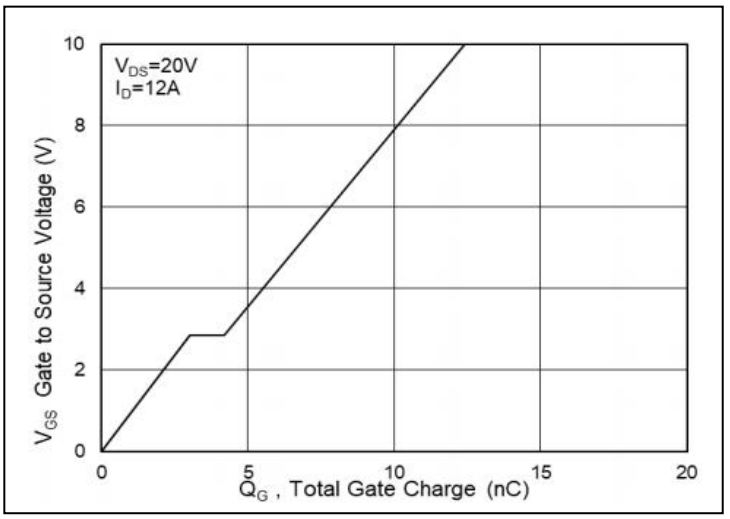


Figure4. Typ. Gate Charge

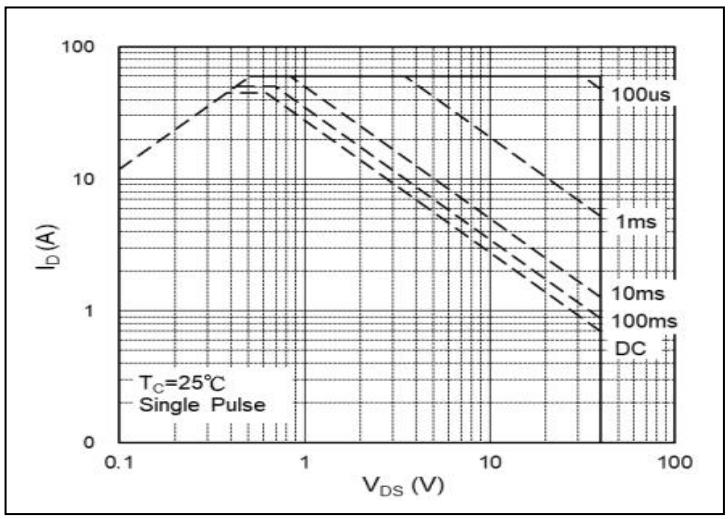


Figure 5. Safe Operation Area Tc=25℃

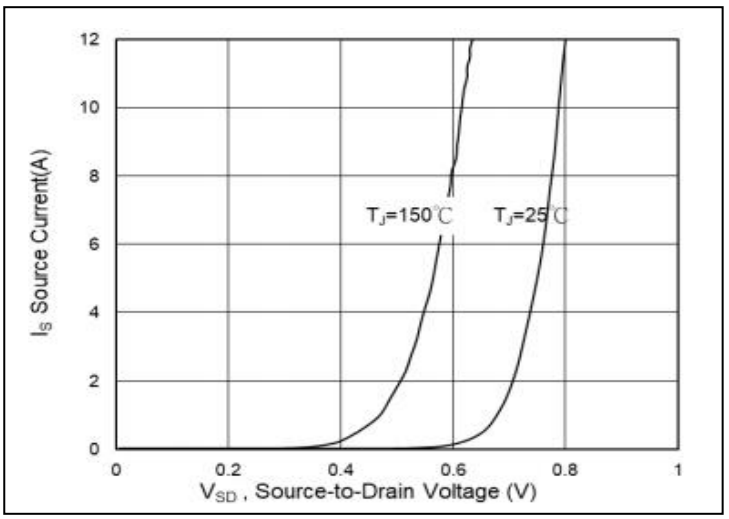


Figure 6. Source Drain Forward Characteristics

Typical Electrical and Thermal Characteristics

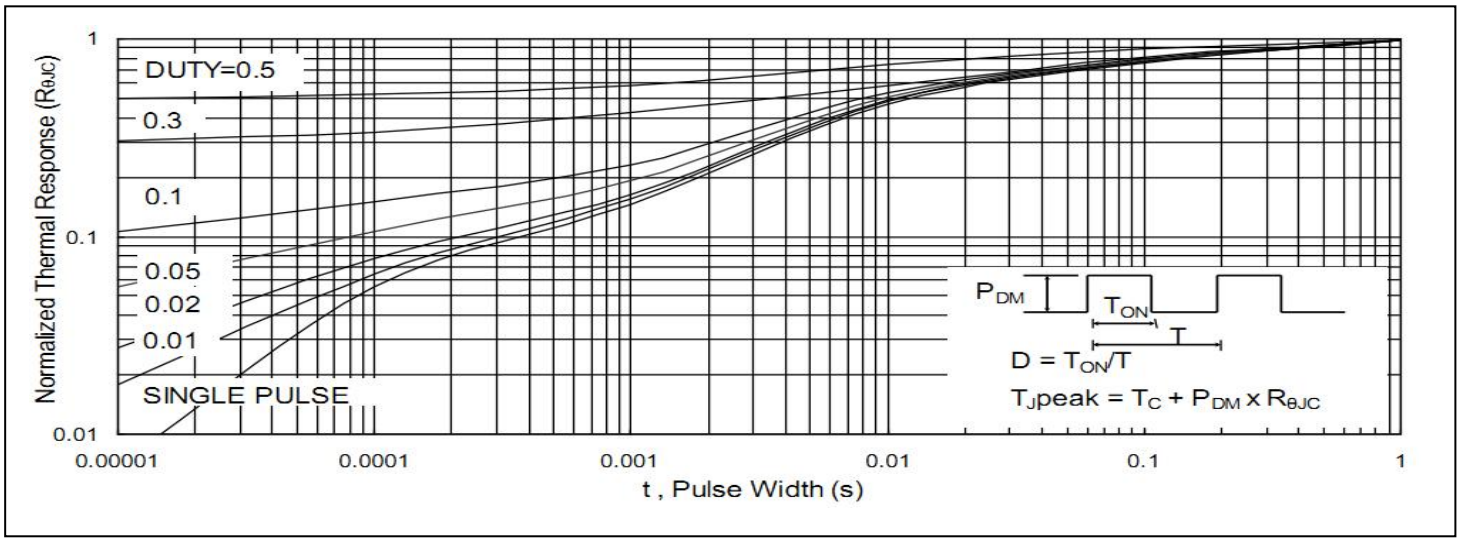
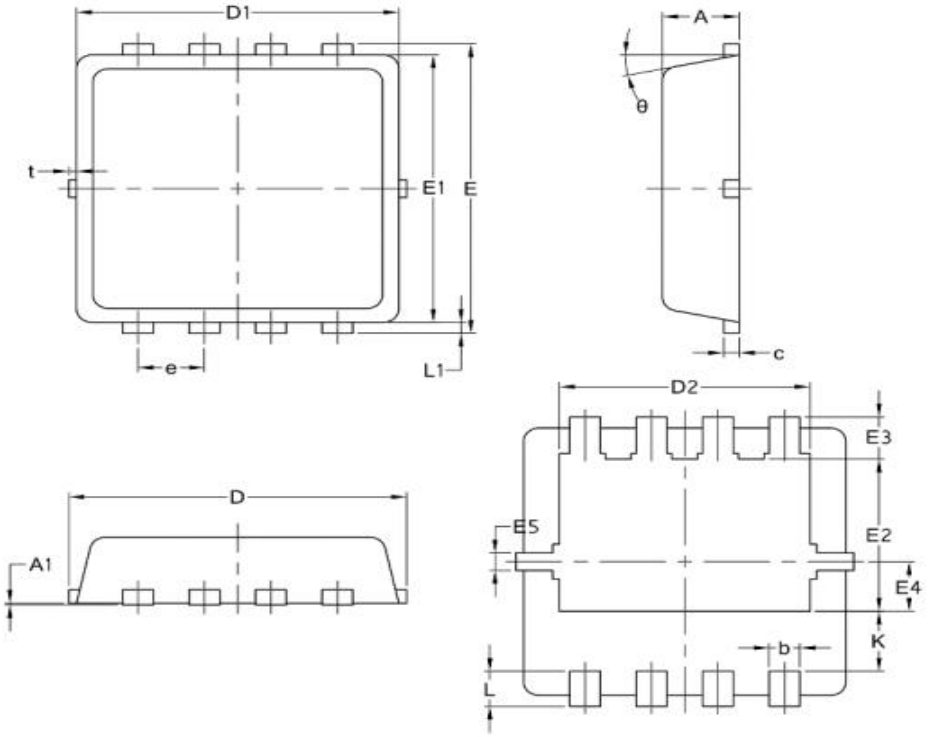


Figure 7. Max.Transient Thermal Impedance

Mechanical Data：



Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
Φ	10	12	14

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