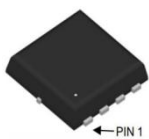
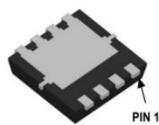


Main Product Characteristics:

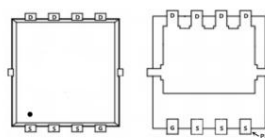
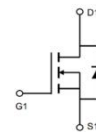
V_{DSS}	40V
$R_{DS(on)}$	6.9m Ω (typ.)
I_D	68A



← PIN 1



PIN 1


Pin Assignments

Schematic Diagram
PDFN 3*3-8L
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°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 Rating

Symbol	Parameter	Max.	Units
$I_D @ TC = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ ①	68	A
I_{DM}	Pulsed Drain Current ②	125	
$P_D @ TC = 25^\circ C$	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
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ C$

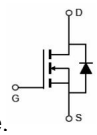
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
R _{θJC}	Junction-to-case ③	—	30	°C/W
R _{θJA}	Junction-to-ambient (t ≤ 10s) ④	—	85	°C/W

Electrical Characteristics @T_A=25°C unless otherwise specified

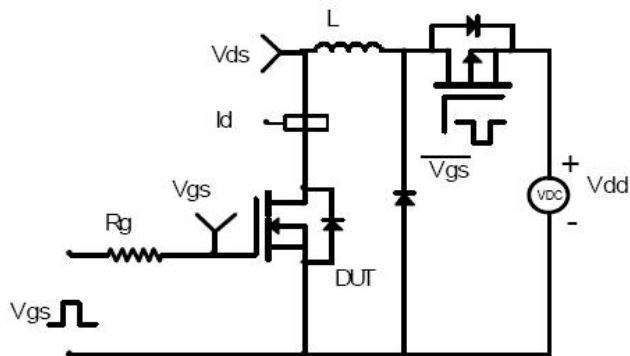
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source breakdown voltage	40	—	—	V	V _{GS} = 0V, I _D = 250μA
R _{DS(on)}	Static Drain-to-Source on-resistance	—	6.9	8.5	mΩ	V _{GS} =10V, I _D =12A
		—	10.5	15		V _{GS} =4.5V, I _D =10A
V _{GS(th)}	Gate threshold voltage	1.2	—	2.5	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

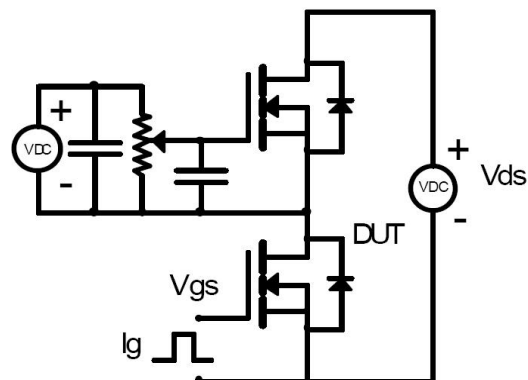
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	30	A	MOSFET symbol showing the integral reverse p-n junction diode. 
V _{SD}	Diode Forward Voltage	—	—	1	V	I _S =1A, V _{GS} =0V

Test circuits and Waveforms

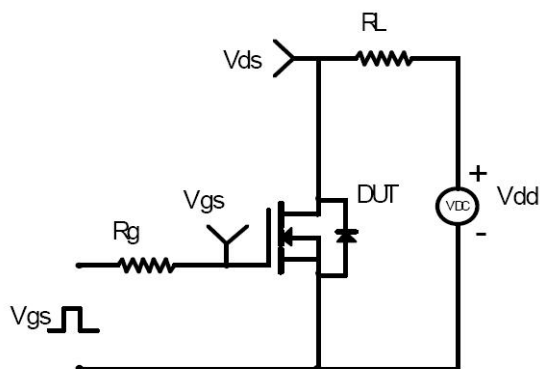
EAS Test Circuit:



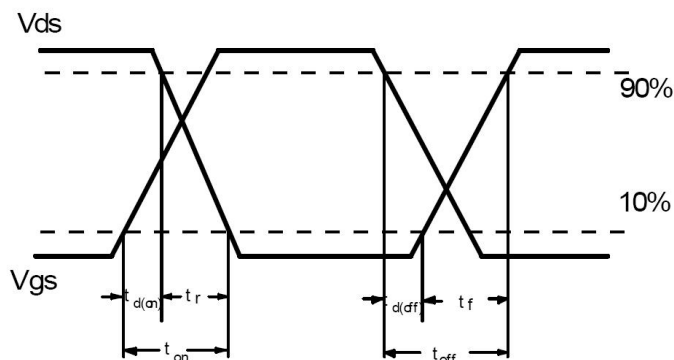
Gate charge test circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

- 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.
- ④ The 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 $T_A = 25^\circ\text{C}$

Typical Electrical and Thermal Characteristics

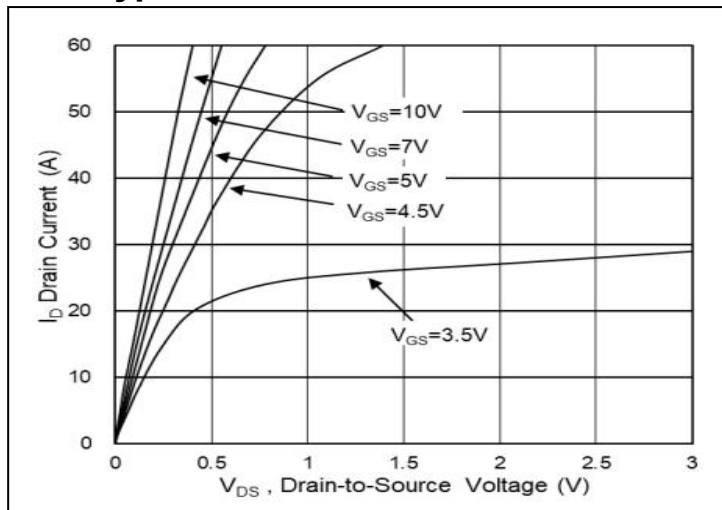


Figure 1. Typ. Output Characteristics

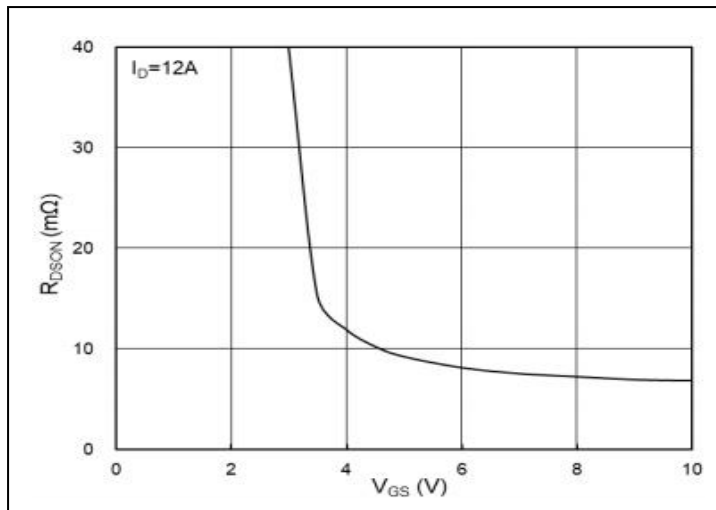


Figure 2. On-Resistance vs. G-S Voltage

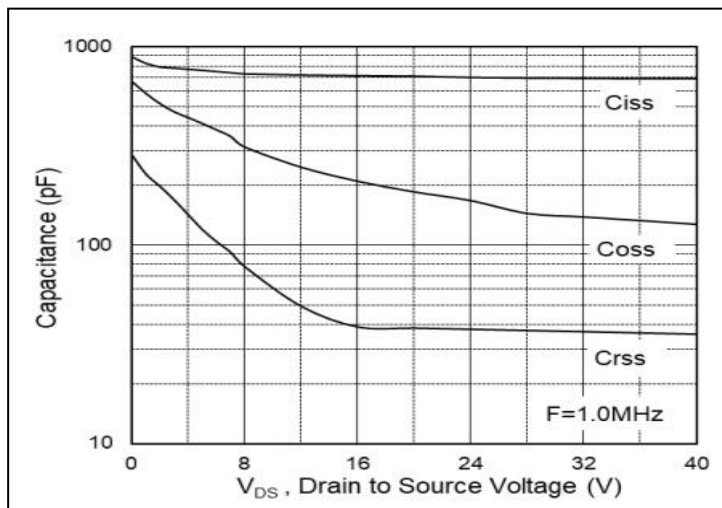


Figure 3. Typ. Capacitance

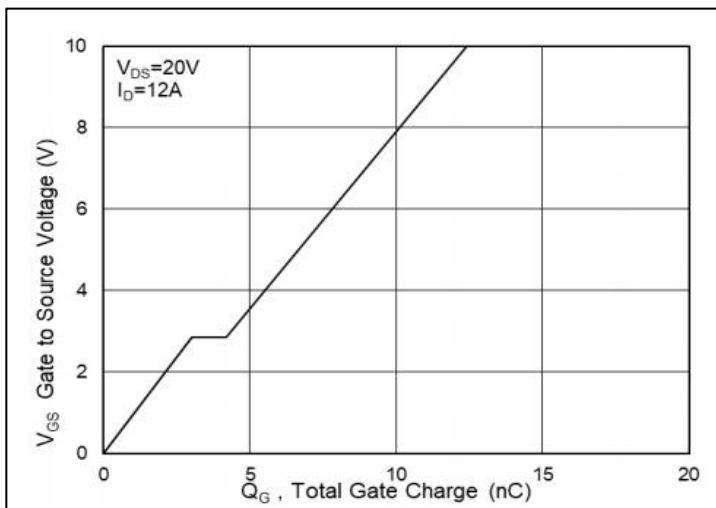


Figure 4. Typ. Gate Charge

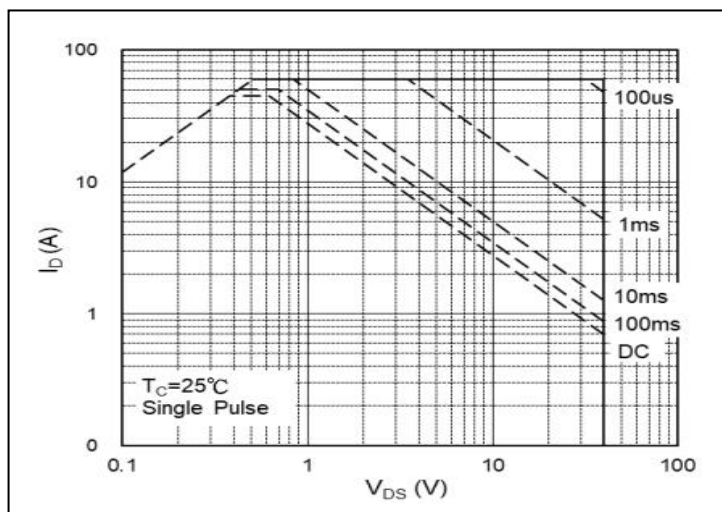


Figure 5. Safe Operation Area $T_C=25^\circ C$

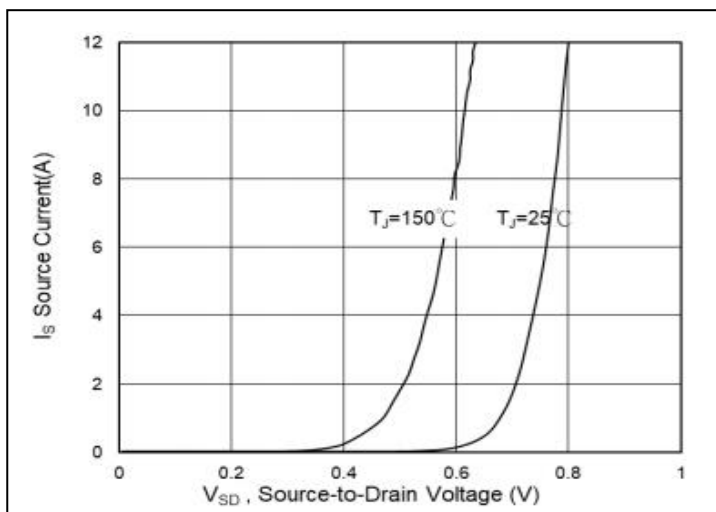


Figure 6. Source Drain Forward Characteristics

Typical Electrical and Thermal Characteristics

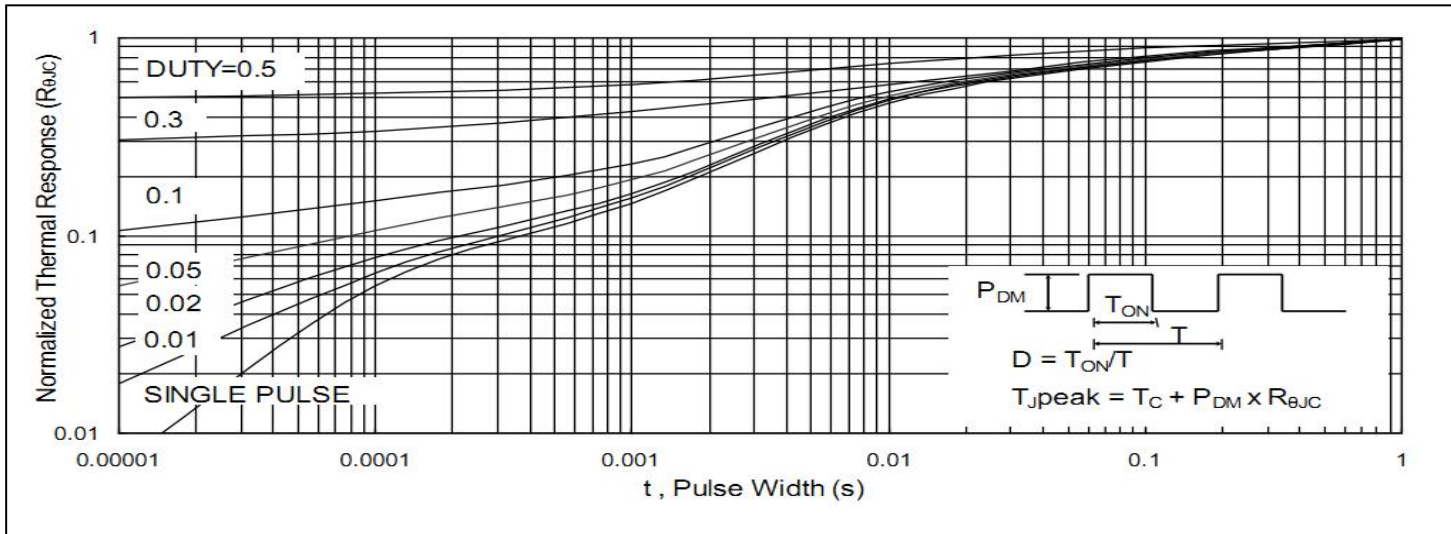
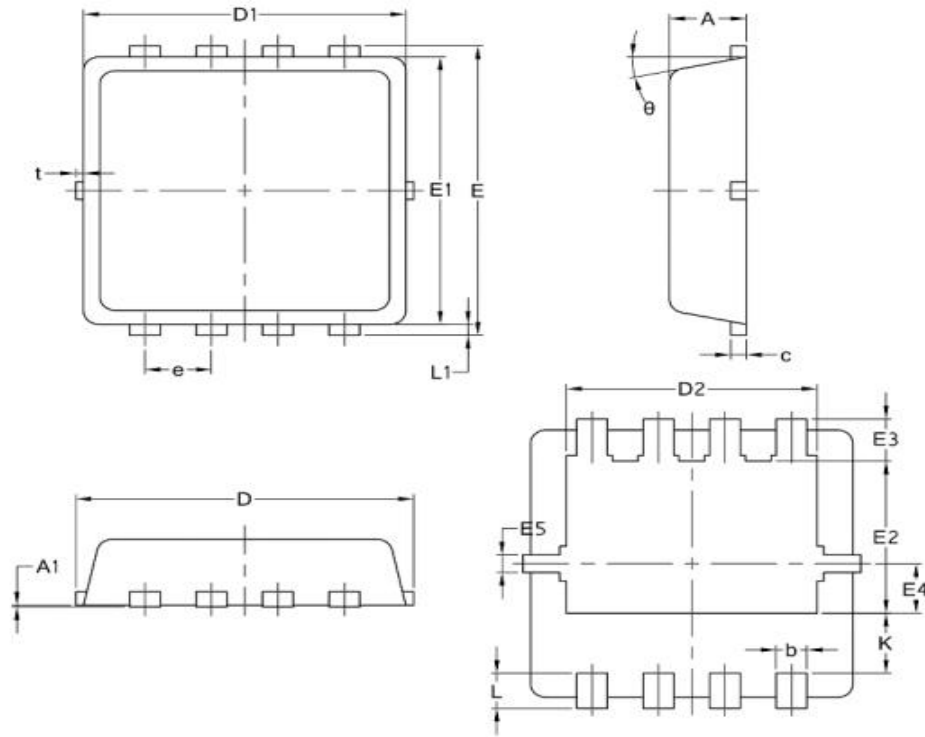


Figure 7. Max.Transient Thermal Impedance

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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