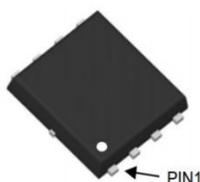
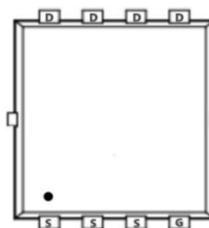
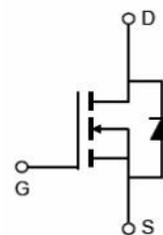


**Main Product Characteristics:**

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


**PQFN 5x6-8L**

**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°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
$I_D @ TC = 25^\circ C$	Continuous Drain Current, <sup>①</sup>	68	A
$I_{DM}$	Pulsed Drain Current <sup>②</sup>	125	
$P_D @ TC = 25^\circ C$	Power Dissipation <sup>③</sup>	1.67	W
$V_{DS}$	Drain-Source Voltage	40	V
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$E_{AS}$	Single Pulse Avalanche Energy @ L=0.1mH	31	mJ
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ C$

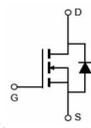
## Thermal Resistance

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

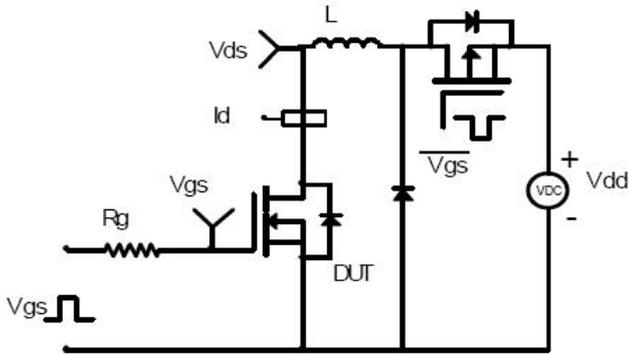
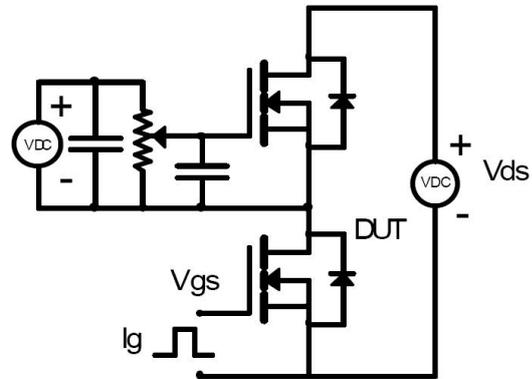
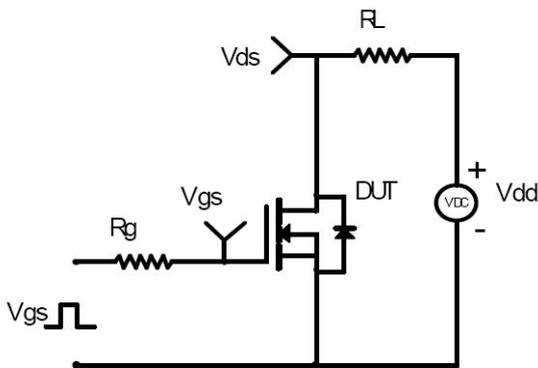
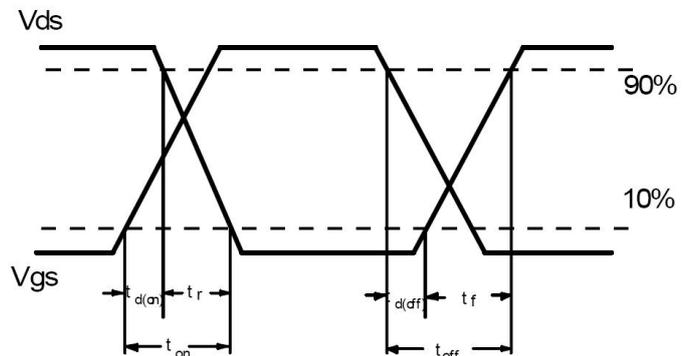
## Electrical Characterizes @T<sub>A</sub>=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V <sub>(BR)DSS</sub>	Drain-to-Source breakdown voltage	40	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
R <sub>DS(on)</sub>	Static Drain-to-Source on-resistance	—	6.9	8.5	mΩ	V <sub>GS</sub> =10V, I <sub>D</sub> =12A
		—	10.5	15	mΩ	V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A
V <sub>GS(th)</sub>	Gate threshold voltage	1.2	—	2.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA
I <sub>DSS</sub>	Drain-to-Source leakage current	—	—	1	μA	V <sub>DS</sub> = 32V, V <sub>GS</sub> = 0V
I <sub>GSS</sub>	Gate-to-Source forward leakage	—	—	100	nA	V <sub>GS</sub> =20V
		—	—	-100		V <sub>GS</sub> = -20V
Q <sub>g</sub>	Total gate charge	—	5.8	—	nC	I <sub>D</sub> = 12A, V <sub>DS</sub> =20V, V <sub>GS</sub> = 4.5V
Q <sub>gs</sub>	Gate-to-Source charge	—	3	—		
Q <sub>gd</sub>	Gate-to-Drain("Miller") charge	—	1.2	—		
t <sub>d(on)</sub>	Turn-on delay time	—	14.3	—	ns	V <sub>GS</sub> =10V, V <sub>DD</sub> =15V, R <sub>GEN</sub> =3.3Ω I <sub>D</sub> = 1A
t <sub>r</sub>	Rise time	—	5.6	—		
t <sub>d(off)</sub>	Turn-Off delay time	—	20	—		
t <sub>f</sub>	Fall time	—	11	—		
C <sub>iss</sub>	Input capacitance	—	690	—	pF	V <sub>GS</sub> = 0V V <sub>DS</sub> = 15V f = 1MHz
C <sub>oss</sub>	Output capacitance	—	193	—		
C <sub>rss</sub>	Reverse transfer capacitance	—	38	—		

## Source-Drain Ratings and Characteristics

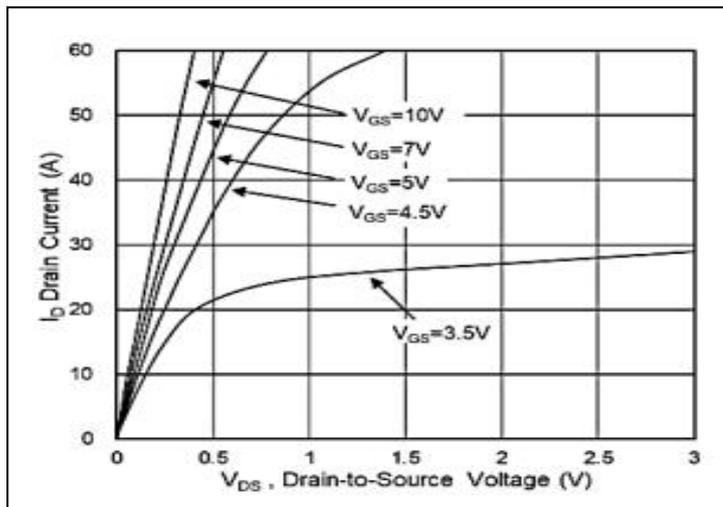
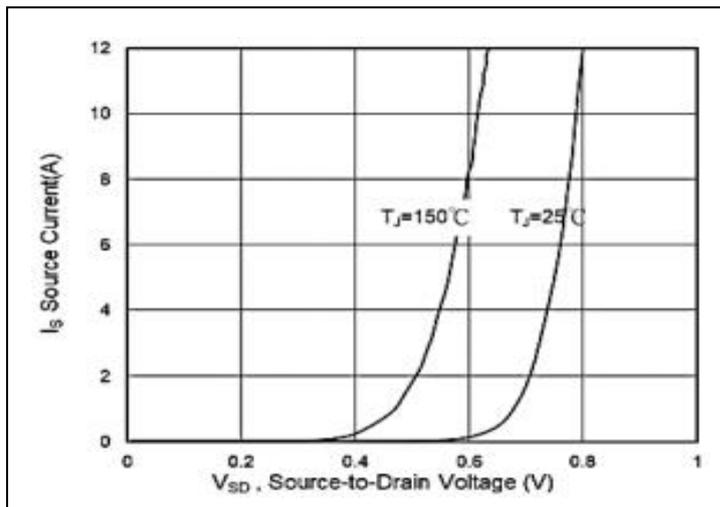
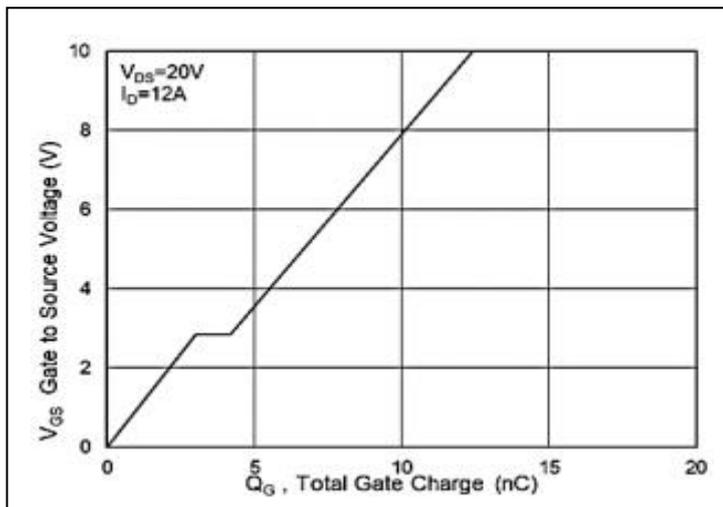
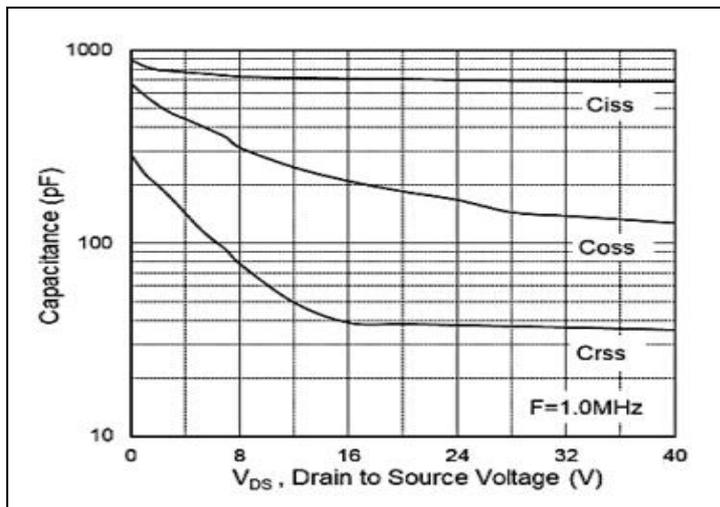
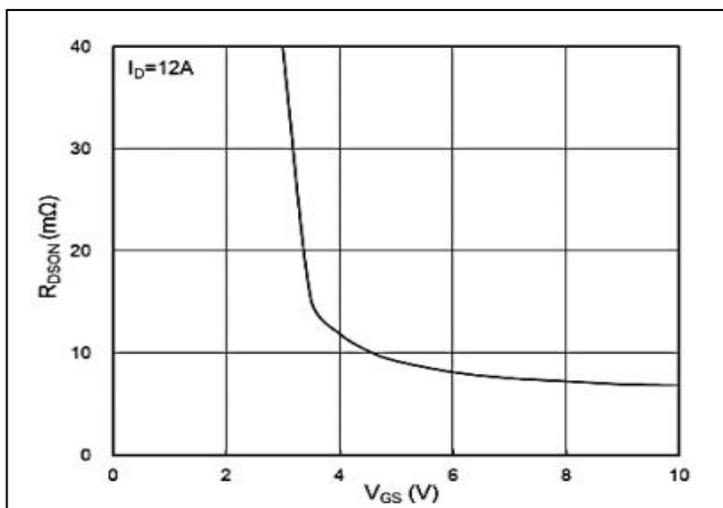
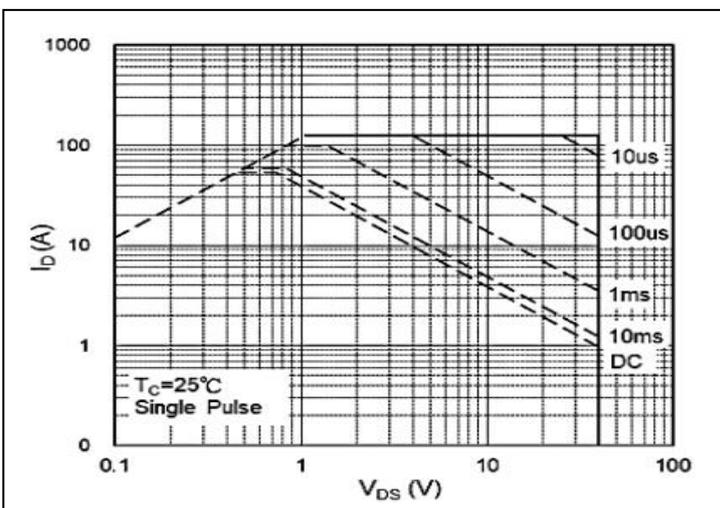
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode)	—	—	30	A	MOSFET symbol showing the integral reverse p-n junction diode. 
V <sub>SD</sub>	Diode Forward Voltage	—	—	1	V	I <sub>S</sub> =1A, V <sub>GS</sub> =0V

## 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  $P_D$  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**

**Figure1. Typical Output Characteristics**

**Figure2. Transfer Characteristics**

**Figure3. Gate-Charge Characteristics**

**Figure4. Capacitance**

**Figure5. On-Resistance vs. G-S Voltage**

**Figure6. Safe Operating Area**

Typical Electrical and Thermal Characteristics

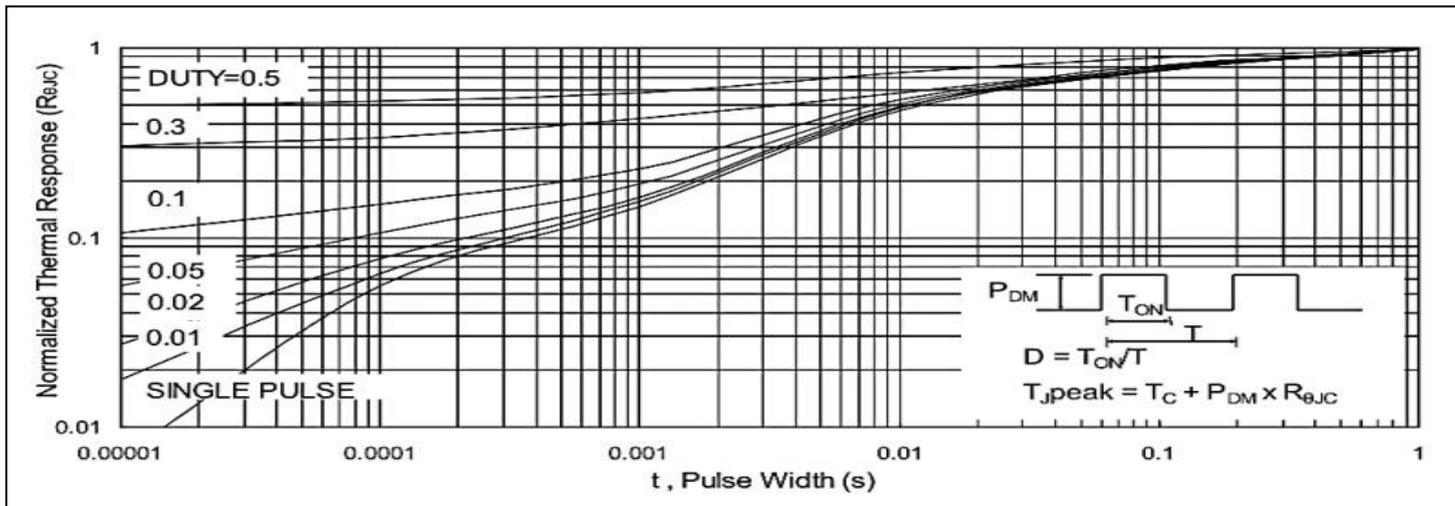
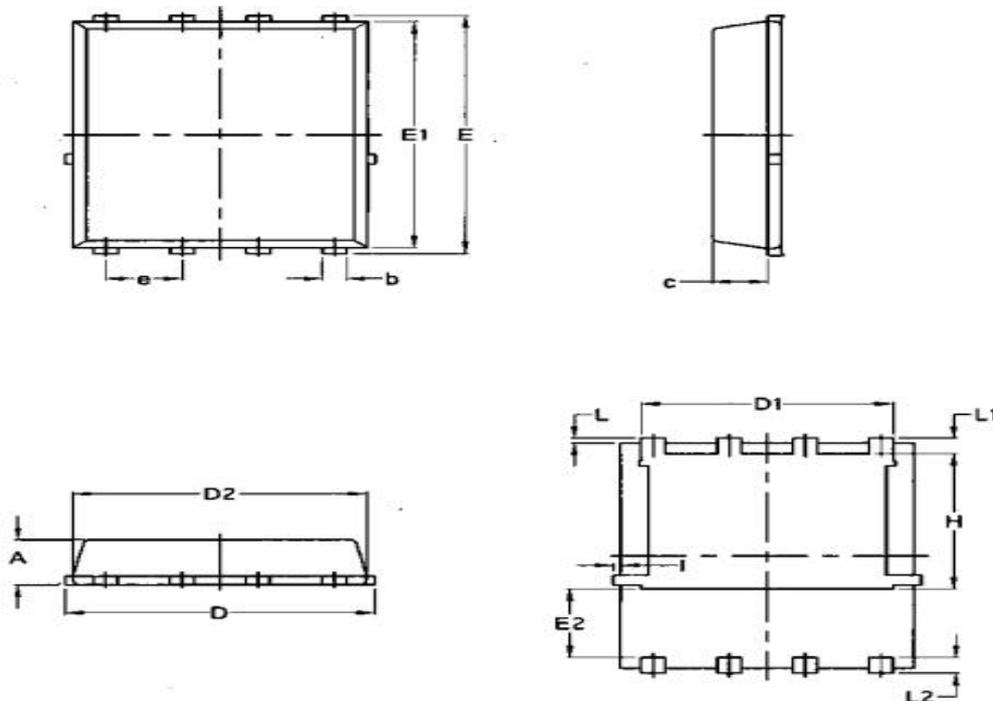


Figure7.Normalized Maximum Transient Thermal Impedance

**Mechanical Data:**

PQFN 5x6-8L Package Outline(Unit:mm)



Symbol	Common			
	mm		Inch	
	Min	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

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