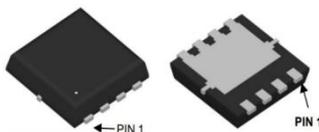
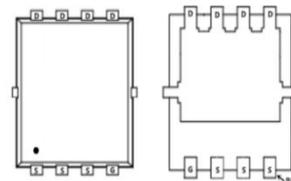
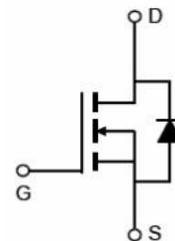


**Main Product Characteristics:**

$V_{DSS}$	30V
$R_{DS(on)}$	6mΩ(typ.)
$I_D$	22A


**PDFN 3\*3-8L**

**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
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}^{(1)}$	22	A
$I_{DM}$	Pulsed Drain Current <sup>(2)</sup>	88	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation <sup>(3)</sup>	8	W
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-to-Source Voltage	± 20	V
$E_{AS}$	Single Pulse Avalanche Energy @ L=0.5mH	65	mJ
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	°C

## Thermal Resistance

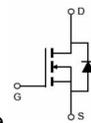
Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case <sup>③</sup>	—	16	°C/W

## Electrical Characterizes @ $T_A=25^\circ\text{C}$ unless otherwise specified

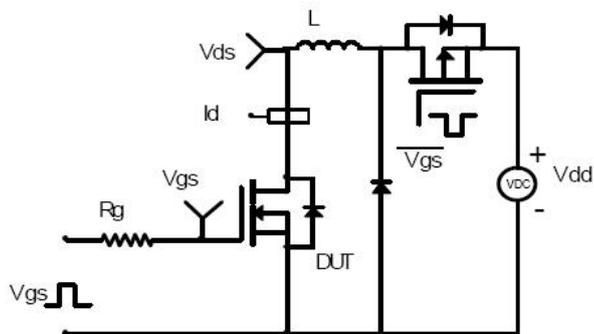
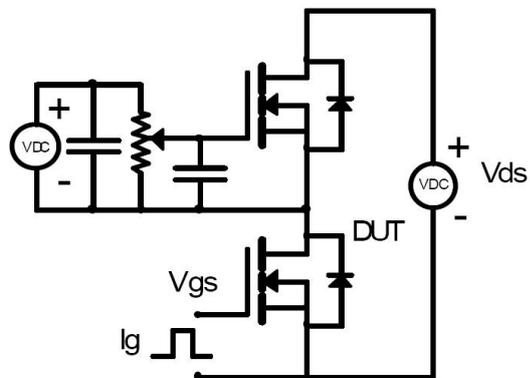
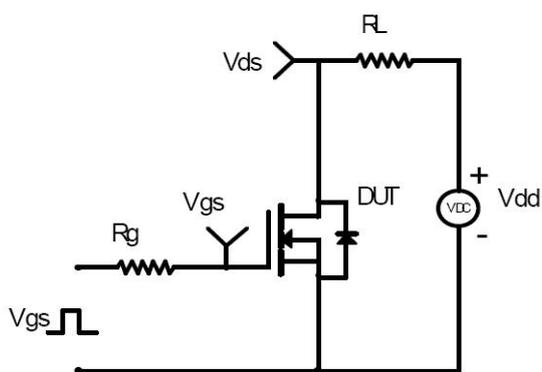
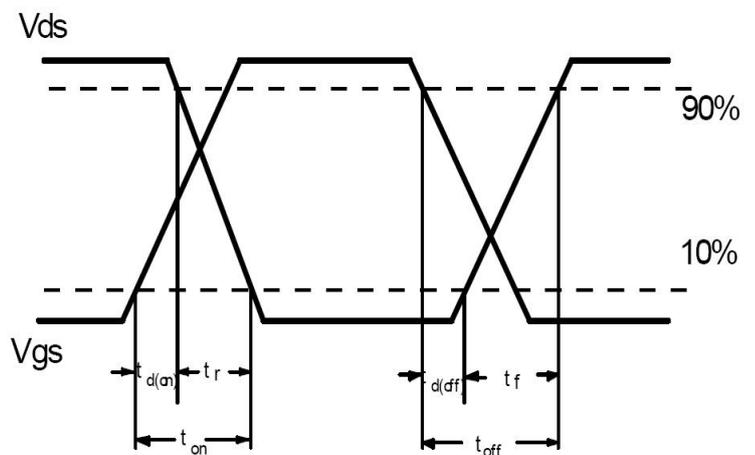
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	6	8	m $\Omega$	$V_{GS}=10V, I_D = 15A$
		—	9.5	14		$V_{GS}=4.5V, I_D = 10A$
$V_{GS(th)}$	Gate threshold voltage	1	—	2.5	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
$I_{DSS}$	Drain-to-Source leakage current	—	—	1	$\mu A$	$V_{DS} = 30V, V_{GS} = 0V$
$I_{GSS}$	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 20V$
		—	—	-100		$V_{GS} = -20V$
$Q_g$	Total gate charge	—	13	—	nC	$I_D = 15A,$ $V_{DS}=15V,$ $V_{GS} = 10V$
$Q_{gs}$	Gate-to-Source charge	—	3.4	—		
$Q_{gd}$	Gate-to-Drain("Miller") charge	—	4.2	—		
$t_{d(on)}$	Turn-on delay time	—	8.4	—	ns	$V_{GS}=10V, V_{DS}=22V,$ $R_{GEN}=2.2\Omega$ $I_D = 10A$
$t_r$	Rise time	—	19.4	—		
$t_{d(off)}$	Turn-Off delay time	—	23.3	—		
$t_f$	Fall time	—	5.6	—		
$C_{iss}$	Input capacitance	—	953	—	pF	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1MHz$
$C_{oss}$	Output capacitance	—	135	—		
$C_{riss}$	Reverse transfer capacitance	—	114	—		

## Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$I_S$	Continuous Source Current (Body Diode)	—	—	22	A	MOSFET symbol showing the integral reverse p-n junction diode.
$I_{SM}$	Pulsed Source Current (Body Diode)	—	—	88	A	
$V_{SD}$	Diode Forward Voltage	—	—	1.2	V	$I_S=15A, V_{GS}=0V$

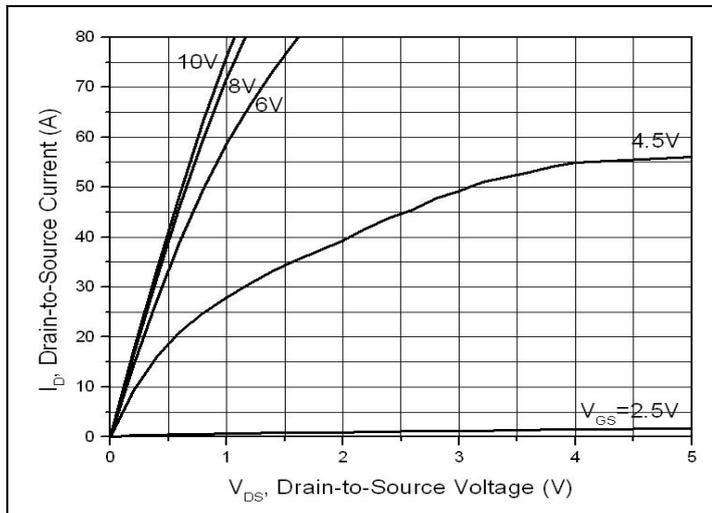
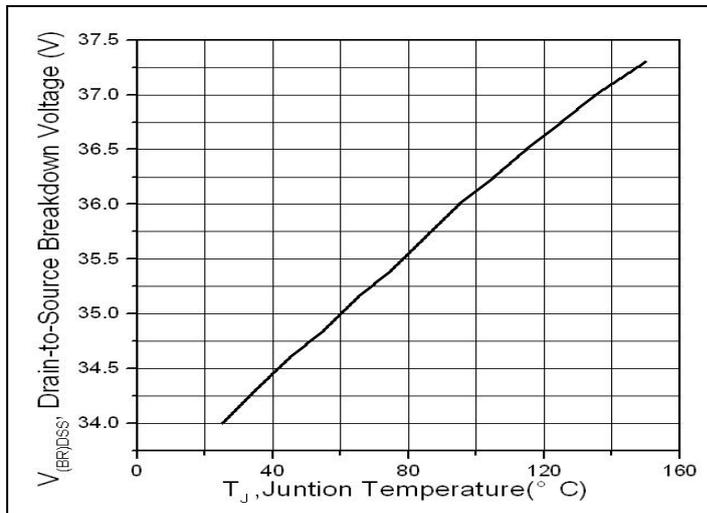
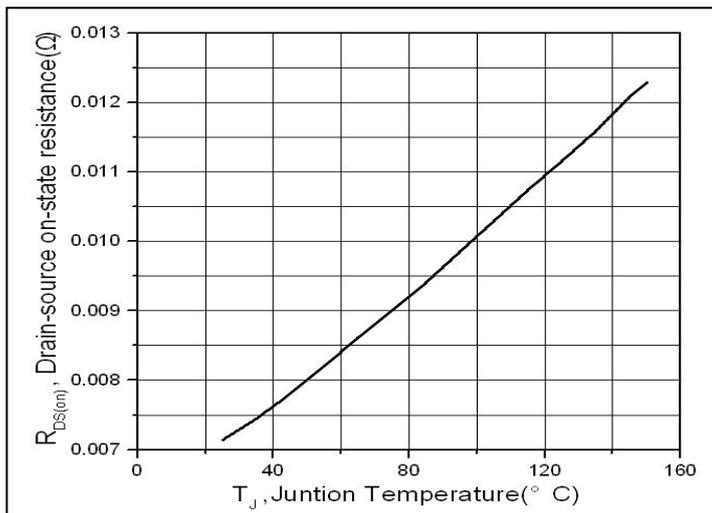
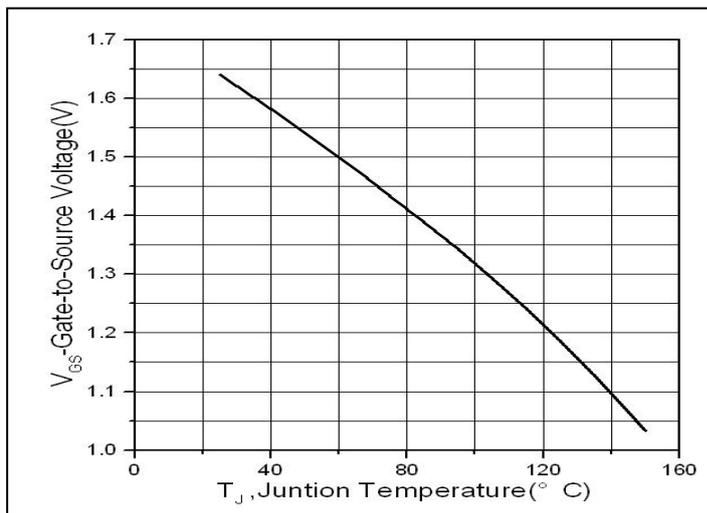
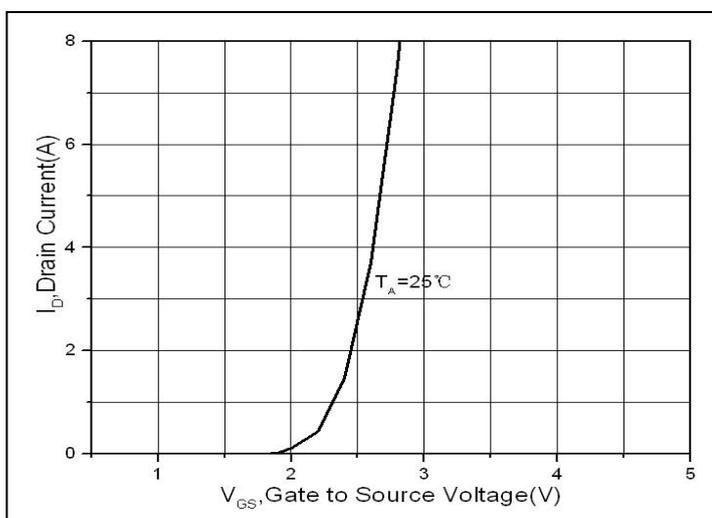
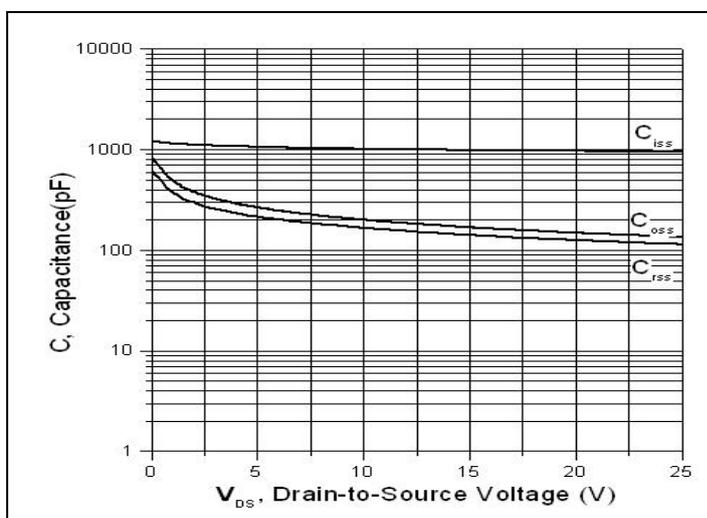


## Test Circuits and Waveforms

**EAS Test Circuit:**

**Gate Charge Test Circuit:**

**Switching Time Test Circuit:**

**Switching Waveforms:**


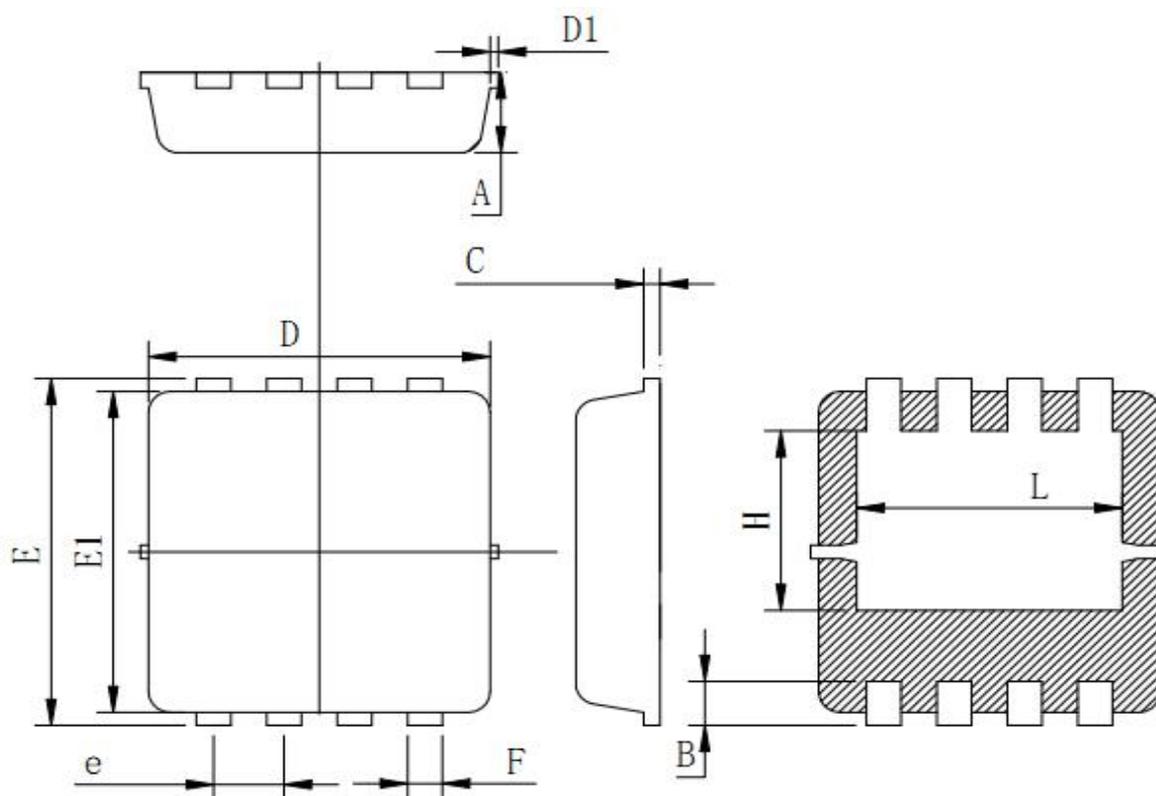
### Notes:

- 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.

**Typical Electrical and Thermal Characteristics**

**Figure 1. Typical Output Characteristics**

**Figure 2. BVDSS vs. Junction Temperature**

**Figure 3. Normalized On-Resistance vs. Junction Temperature**

**Figure 4. Normalized  $V_{GS(th)}$  vs. Junction Temperature**

**Figure 5. Transfer Characteristics**

**Figure 6. Capacitance Characteristics**

**Mechanical Data:**

PDFN 3\*3 Package Outline(Unit:mm)



Symbol	Min	Typ	Max
A	0.725	0.775	0.825
B	0.28	0.38	0.48
C	0.13	0.15	0.20
D	3.05	3.15	3.25
D1			0.10
E	3.25	3.35	3.45
E1	3.0	3.1	3.2
e	0.60	0.65	0.70
F	0.25	0.30	0.35
H	1.63	1.73	1.83
L	2.35	2.45	2.55

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