

### N-Channel Enhancement-Mode MOSFET (30V, 37 A)

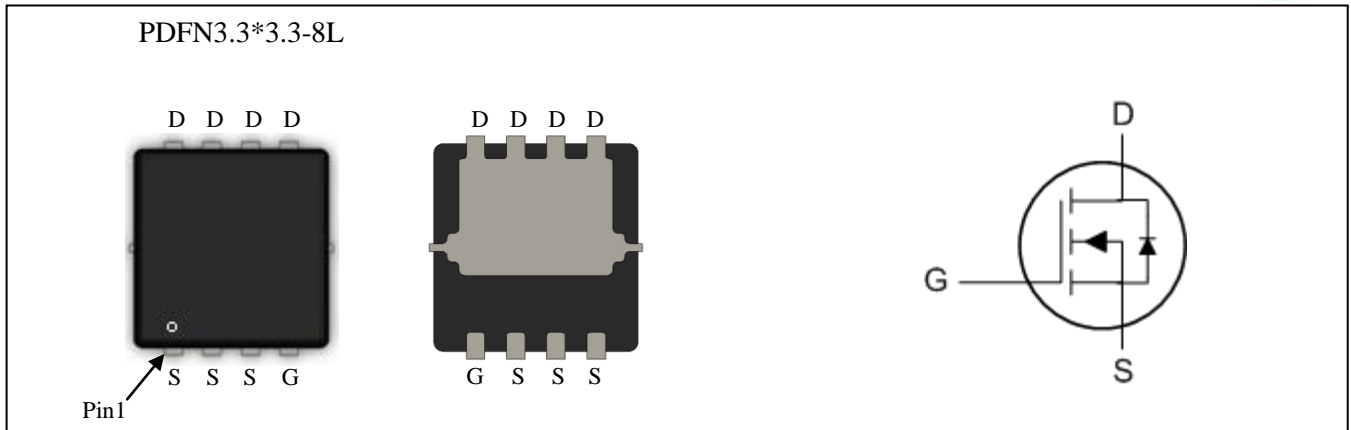
#### PRODUCT SUMMARY

$V_{DSS}$	$I_D$	$R_{DS(on)}$ (m $\Omega$ ) Max
30V	37A	16.5 @ $V_{GS} = 4.5V, I_D=10A$
		12 @ $V_{GS} = 10V, I_D=15A$

#### Features

- Super high dense cell trench design for low  $R_{DS(on)}$ .
- Green Device Available
- Advanced high cell density Trench technology
- Ordering information: GR7430 (Lead (Pb) - free and halogen-free)
- 100% EAS Guaranteed
- Super Low Gate Charge
- Excellent CdV/dt effect decline

RoHS+HF



#### Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current <sup>a</sup> @ $T_C=100^\circ\text{C}$	37	A
$I_D$	Continuous Drain Current <sup>a</sup> @ $T_C=25^\circ\text{C}$	24	A
$I_{DM}$	Drain Current (Pulsed) <sup>b</sup>	75	A
$E_{AS}$	Single Pulse Avalanche Energy <sup>c</sup> @ $L=0.1\text{mH}$	24.2	mJ
$I_{AS}$	Single Pulse Avalanche Current @ $L=0.1\text{mH}$	22	A
$P_D$	Total Power Dissipation <sup>d</sup> @ $T_A=25^\circ\text{C}$	1.67	W
$T_j, T_{stg}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient (Steady State) <sup>a</sup>	75	$^\circ\text{C}/\text{W}$

## Electrical Characteristics (T<sub>A</sub>=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
<b>•Off Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V	-	-	-1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>•On Characteristics<sup>c</sup></b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	-	2.5	V
R <sub>DS(on)</sub>	Drain-Source On-State Resistance <sup>b</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =15A	-	8.5	12	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A	-	12.5	16.5	
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =15A	-	24.4	-	S
<b>•Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz	-	896	-	pF
C <sub>oss</sub>	Output Capacitance		-	126	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	108	-	
<b>•Switching Characteristics</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, I <sub>D</sub> =12A, V <sub>GS</sub> =4.5V	-	9.82	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	2.24	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	5.54	-	
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =15V, I <sub>D</sub> =20A, V <sub>GS</sub> =10V, R <sub>G</sub> =1.5Ω	-	6.4	-	nS
t <sub>r</sub>	<sup>b</sup> Turn-on Rise Time		-	39	-	
t <sub>d(off)</sub>	Turn-off Delay Time		-	21	-	
t <sub>f</sub>	Turn-off Fall Time		-	4.7	-	
<b>•Drain-Source Diode Characteristics</b>						
V <sub>SD</sub>	Drain-Source Diode Forward Voltage <sup>b</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =-1.0A	-	-	1	V
I <sub>S</sub>	Continuous Source Current <sup>a,e</sup>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	-	-	37	A
I <sub>SM</sub>	Pulsed Source Current <sup>b,e</sup>		-	-	75	

Note :

a. The data tested by surface mounted on a 1 inch2 FR-4 board with 20Z copper.

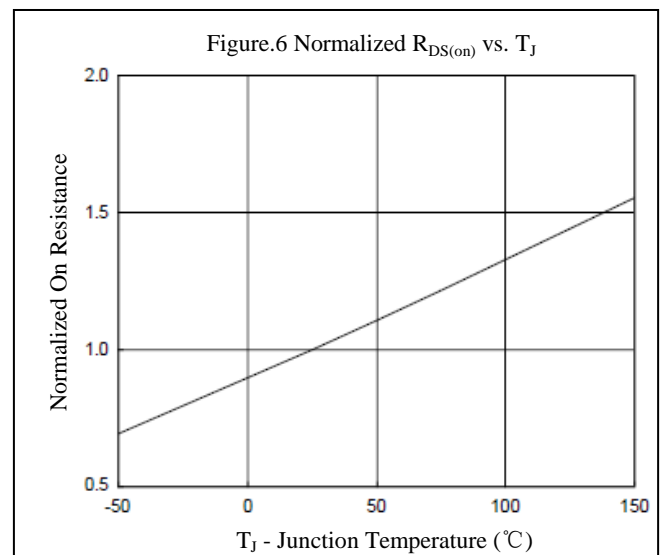
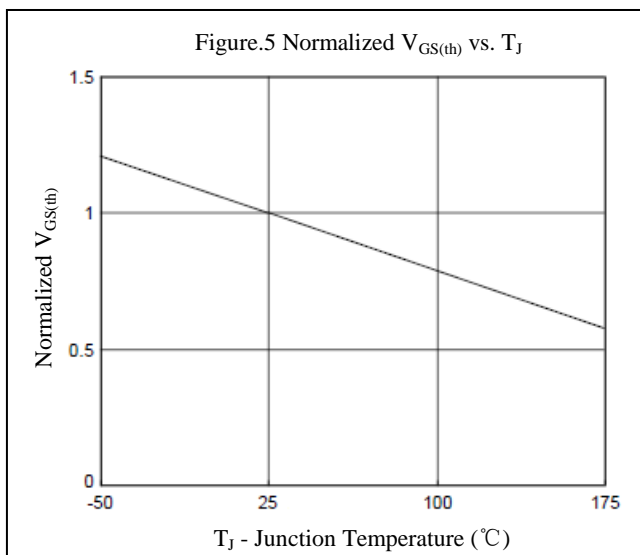
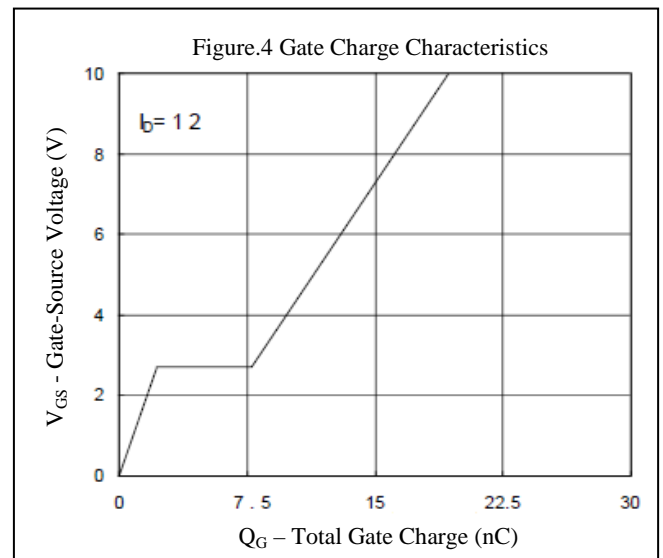
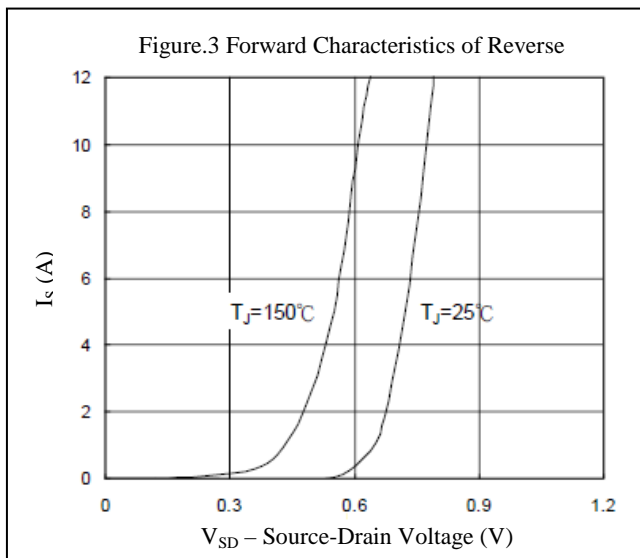
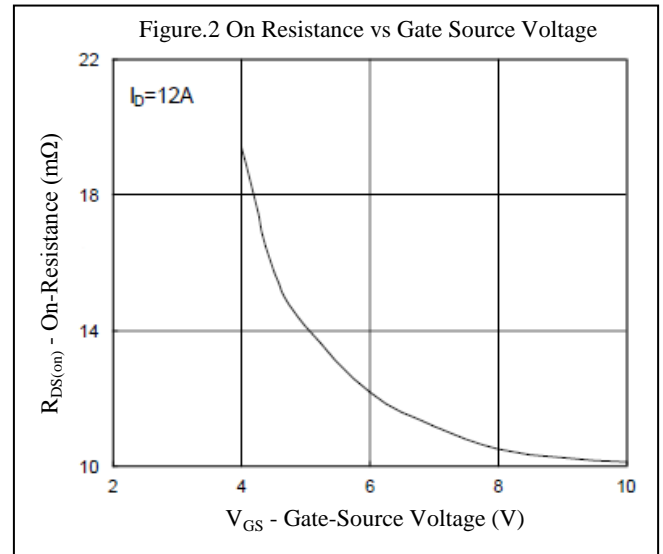
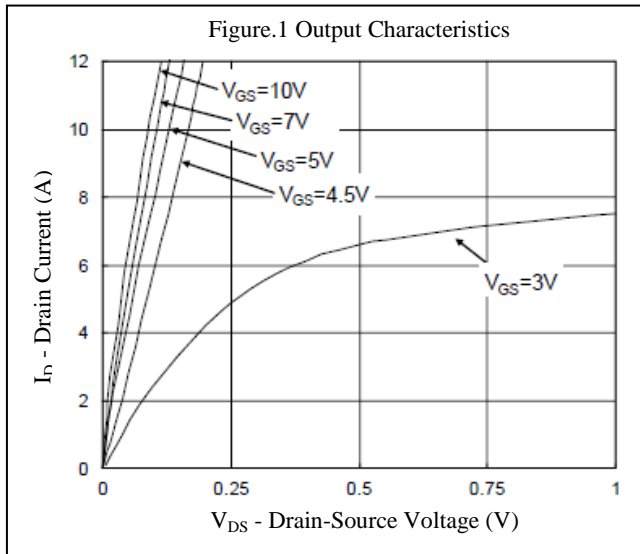
b. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

c. The E<sub>AS</sub> data shows Max. rating . The test condition is V<sub>DD</sub>=25V, V<sub>GS</sub>=10V, L=0.1mH, I<sub>AS</sub>=22A

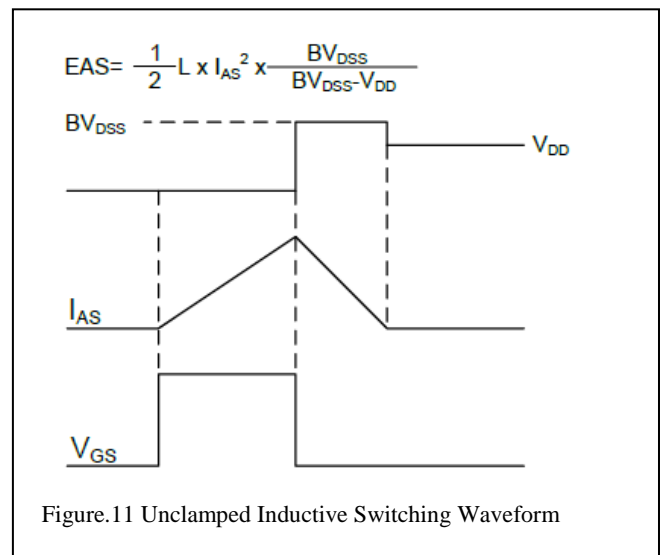
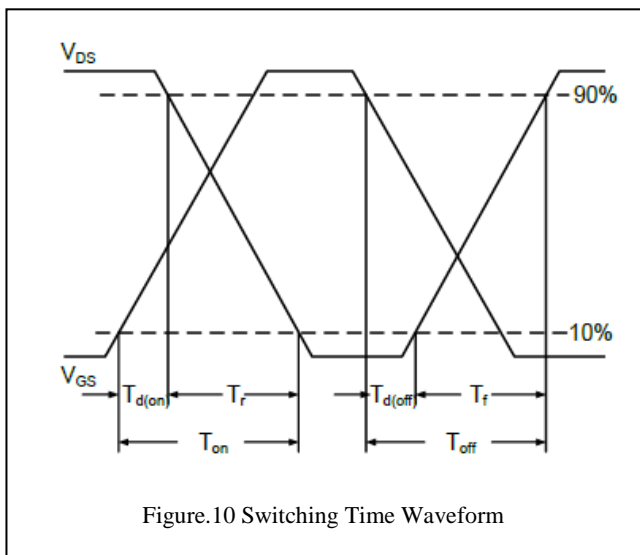
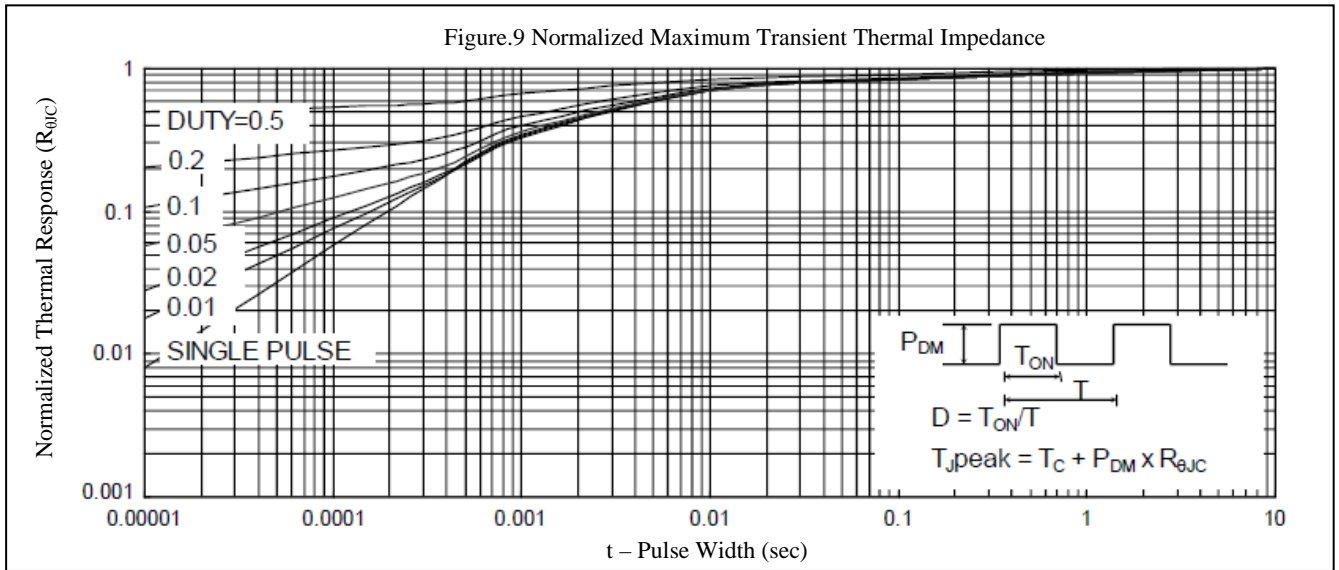
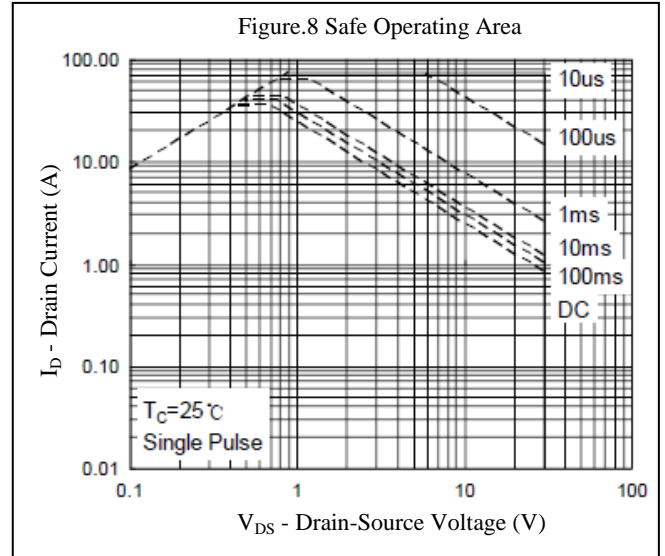
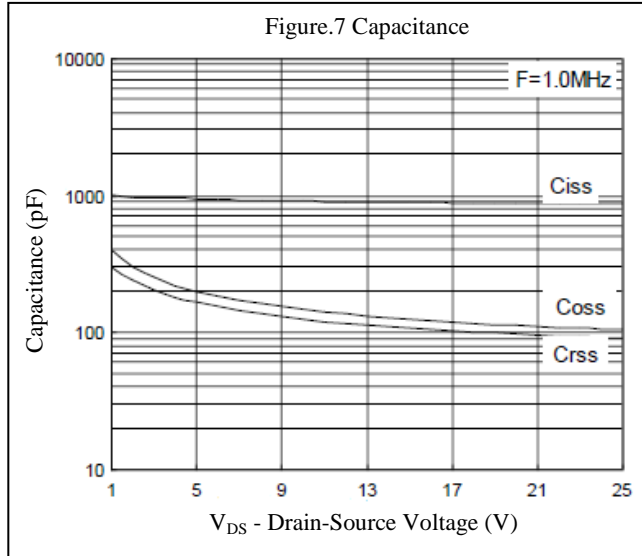
d. The power dissipation is limited by 175°C junction temperature

e. The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.

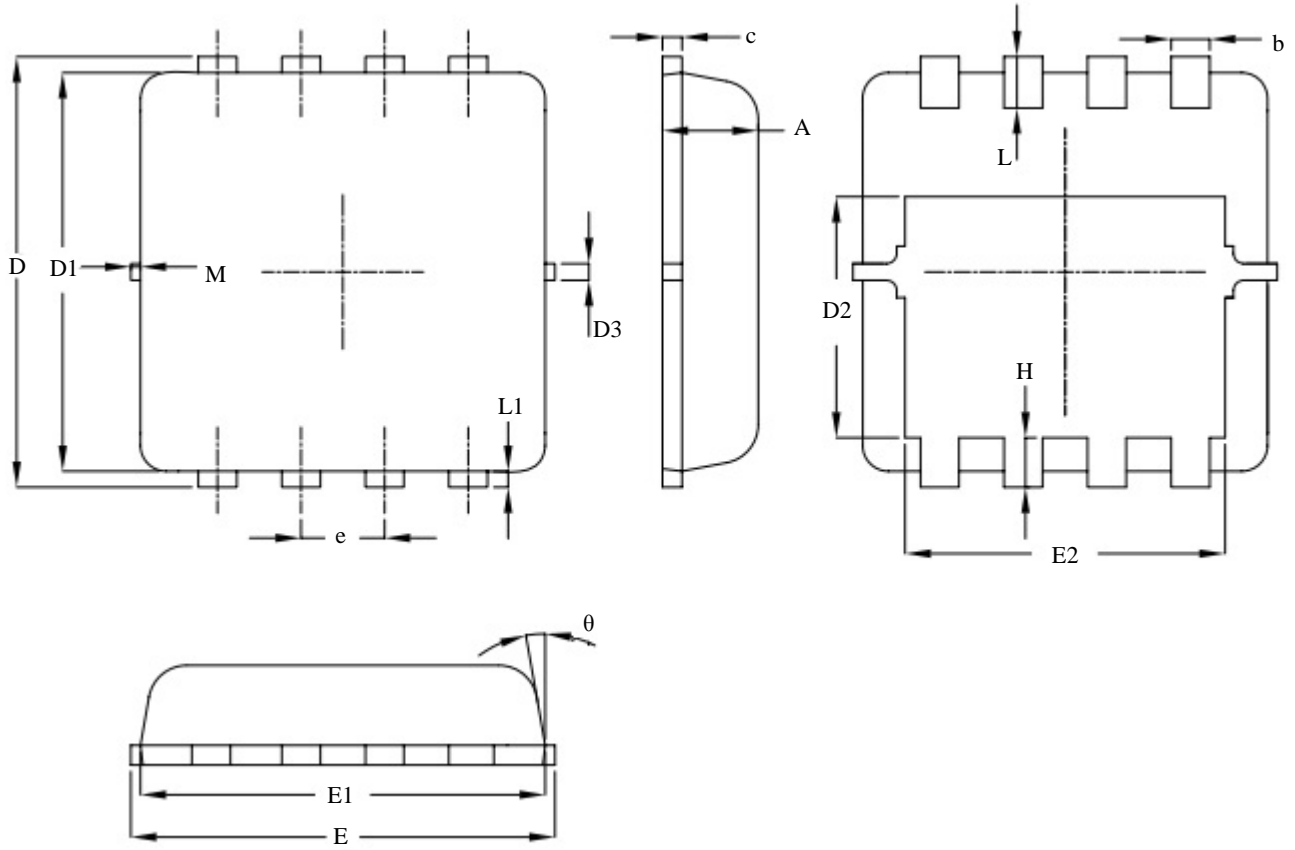
## Characteristics Curve



## Characteristics Curve



## PDFN3.3\*3.3-8L PACKAGE OUTLINE DIMENSIONS



Symbol	MM			INCH		
	MIN	TYP	MAX	MIN	TYP	MAX
A	0.70	0.75	0.80	0.028	0.030	0.031
b	0.25	0.30	0.35	0.010	0.012	0.014
c	0.10	0.15	0.25	0.004	0.006	0.010
D	3.25	3.35	3.45	0.128	0.132	0.136
D1	3.00	3.10	3.20	0.118	0.122	0.126
D2	1.78	1.88	1.98	0.070	0.074	0.078
D3	-	0.13	-	-	0.005	-
E	3.20	3.30	3.40	0.126	0.130	0.134
E1	3.00	3.15	3.20	0.118	0.124	0.126
E2	2.39	2.49	2.59	0.094	0.098	0.102
e	0.65BSC			0.026BSC		
H	0.30	0.39	0.50	0.012	0.015	0.020
L	0.30	0.40	0.50	0.012	0.016	0.020
L1	-	0.13	-	-	0.005	-
θ	-	10°	12°	-	10°	12°
M	-	-	0.15	-	-	0.006



## Notice

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