

N-Channel Enhancement Mode MOSFET (30V,100A)

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(on)}$ (m Ω) Max
30V	100A	2.1 @ $V_{GS} = 10V, I_D = 20A$
		2.6 @ $V_{GS} = 4.5V, I_D = 20A$

Features

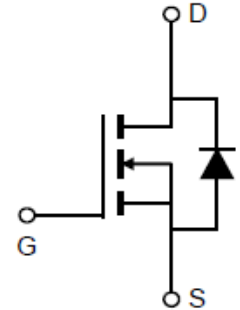
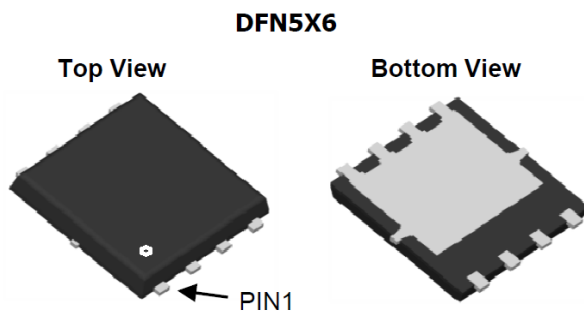
- Latest Trench Power MOSFET technology
- Low Gate Charge
- Low $R_{ds(on)}$ for high frequency switching and Reduced switching losses.
- High Current Capability

Application

- DC/DC Converters in Computing, Servers, and POL
- Isolated DC/DC Converters in Telecom and Industrial

General Description

- Case: DFN 5X6-8L
- Case Material: Molded Plastic. UL Flammability
- Moisture Sensitivity: Level 1 per
- RoHS and Halogen-Free Compliant



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

Symbol	Parameter	Ratings	Unit
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current (Continuous) (a)	100	A
I_{DM}	Drain Current (Pulsed) (C) (a)	200	A
P_D	Total Power Dissipation @ $T_A = 25^\circ C$ (b)	78	W
	Total Power Dissipation @ $T_A = 100^\circ C$ (b)	32	
T_{Opr}	Operating Temperature Range	85	$^\circ C$
T_{stg}	Storage Temperature Range	- 55 to +150	$^\circ C$
$R_{\theta JA}$	Maximum Junction-to-Ambient ($\leq 10S$)	20	$^\circ C/W$
	Maximum Junction-to-Ambient (Steady-State)	50	$^\circ C/W$

a: Repetitive Rating: Pulse width limited by the maximum junction temperature.
b: 1-in² 2oz Cu PCB board

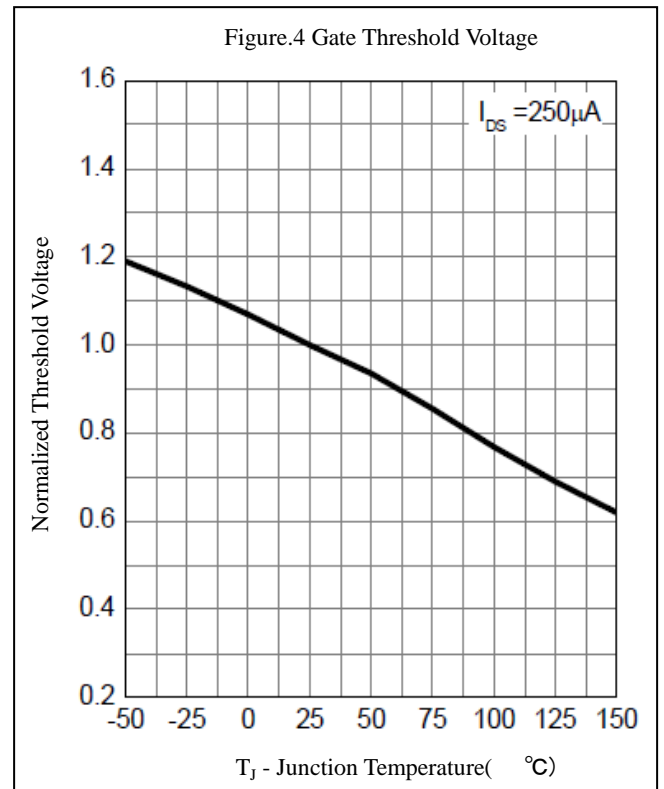
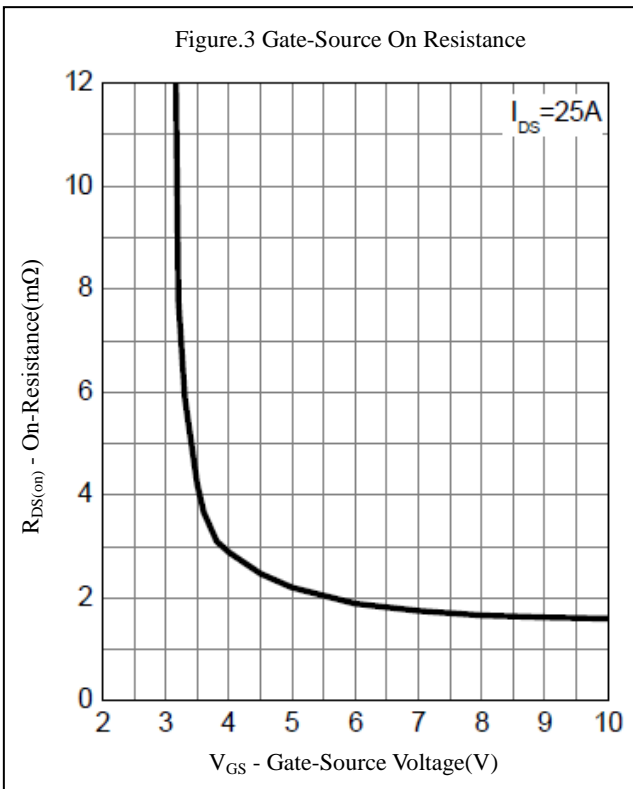
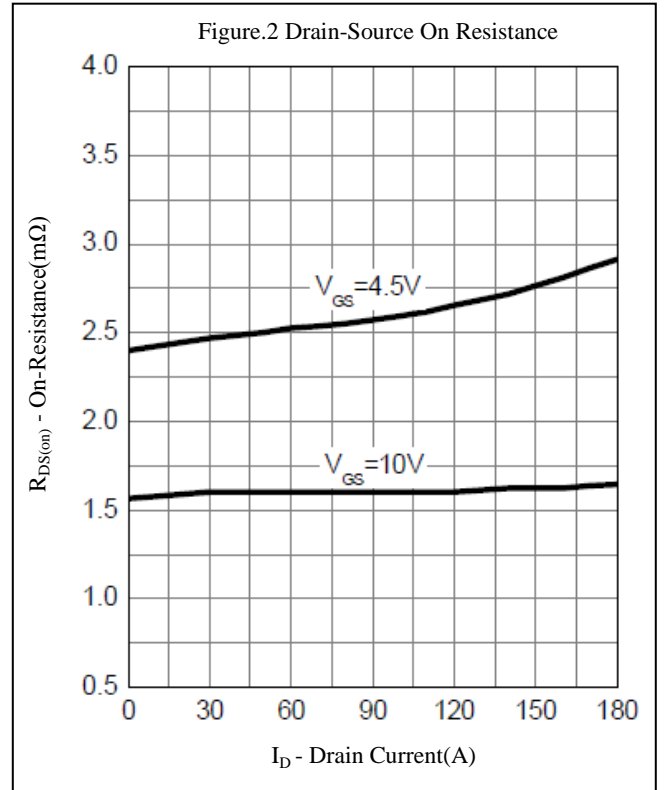
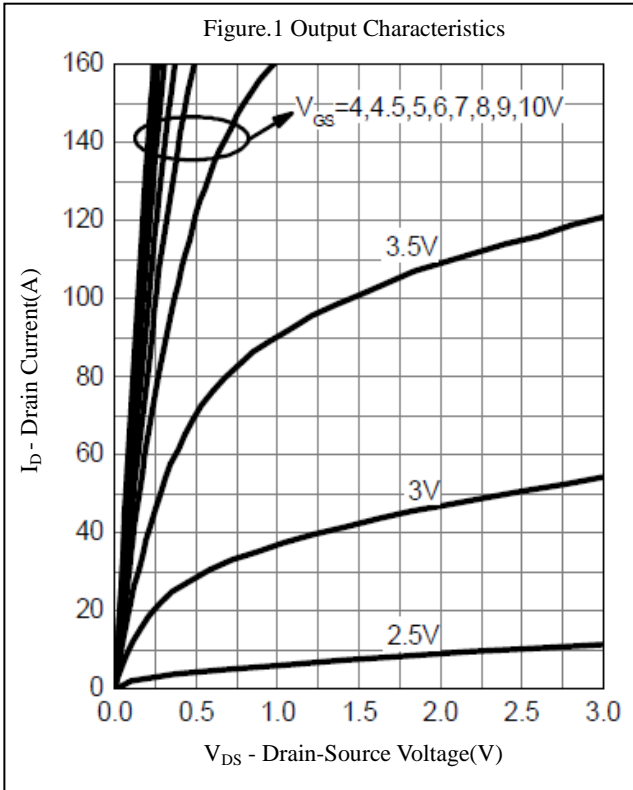
Electrical Characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
•Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 24V, V_{GS} = 0V$	-	-	1	nA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
•On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.4	-	2.5	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS} = 10V, I_D = 20A$		1.5	2	m Ω
		$V_{GS} = 4.5V, I_D = 20A$		2.0	3.2	
G_{FS}	Forward Transconductance	$V_{DS} = 5V, I_D = 15A$	-	30	-	S
•Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$	-	3200	-	pF
C_{oss}	Output Capacitance		-	1250	-	
C_{rss}	Reverse Transfer Capacitance		-	148	-	
•Switching Characteristics						
Q_g	Total Gate Charge(10V)	$V_{DS} = 15V, I_D = 4.8A, V_{GS} = 15V$	-	78	-	nC
Q_g	Total Gate Charge(4.5)		-	36	-	
Q_{gs}	Gate-Source Charge		-	9.7	-	
Q_{gd}	Gate-Drain Charge		-	15.1	-	
$t_{d(on)}$	Turn-on Delay Time	$V_{GS} = 10V, V_{DS} = 15V$ $R_L = 0.75\Omega, R_{GEN} = 3\Omega,$	-	8.1	-	nS
t_r	Turn-on Rise Time		-	5.2	-	
$t_{d(off)}$	Turn-off Delay Time		-	35	-	
t_f	Turn-off Fall Time		-	9.3	-	
T_{rr}	Body Diode Reverse Recovery Time	$I_F = 20A, dI/dt = 500A/\mu s$	-	29	-	nS
Q_{rr}	Body Diode Reverse Recovery Charge	$I_F = 20A, dI/dt = 500A/\mu s$	-	68	-	nC

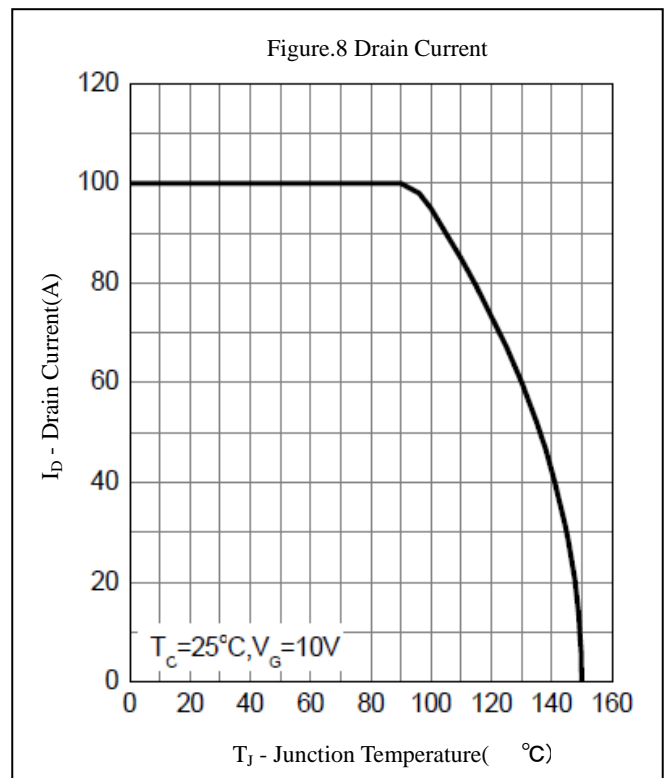
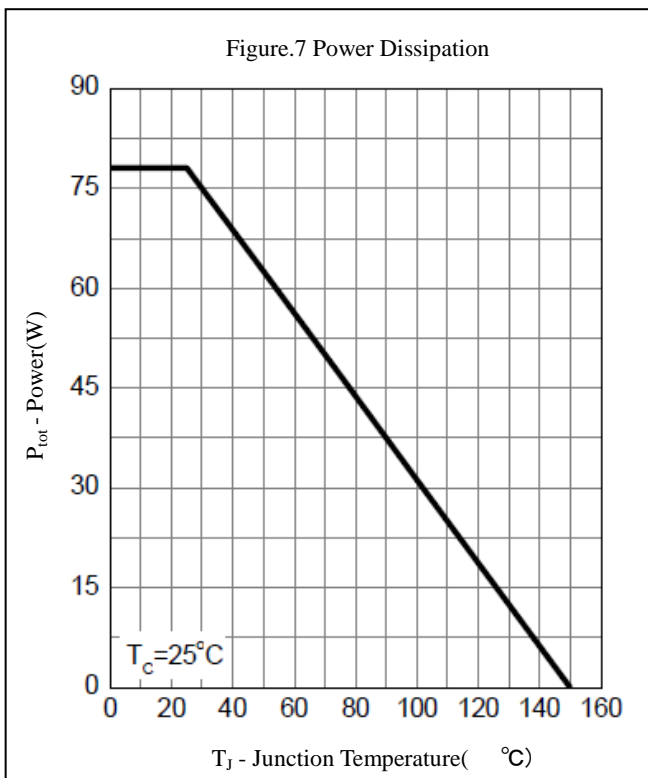
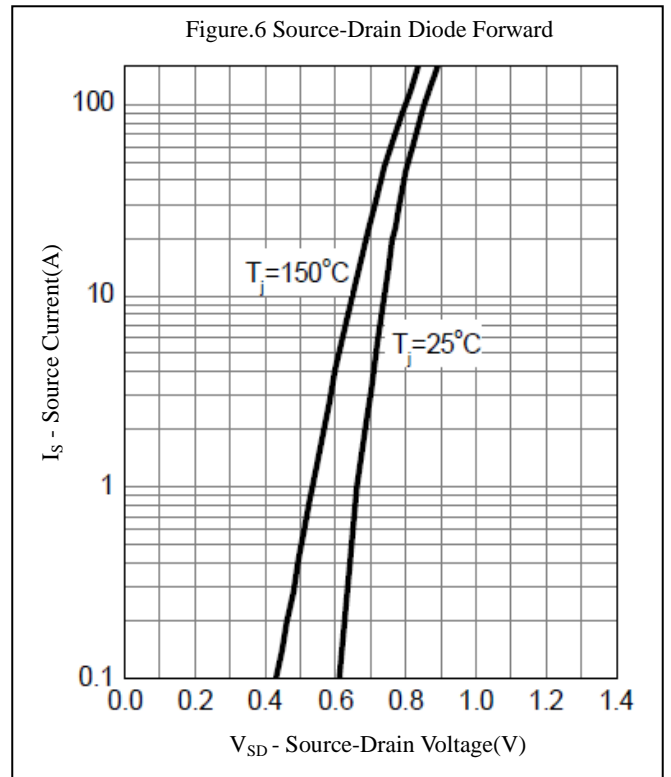
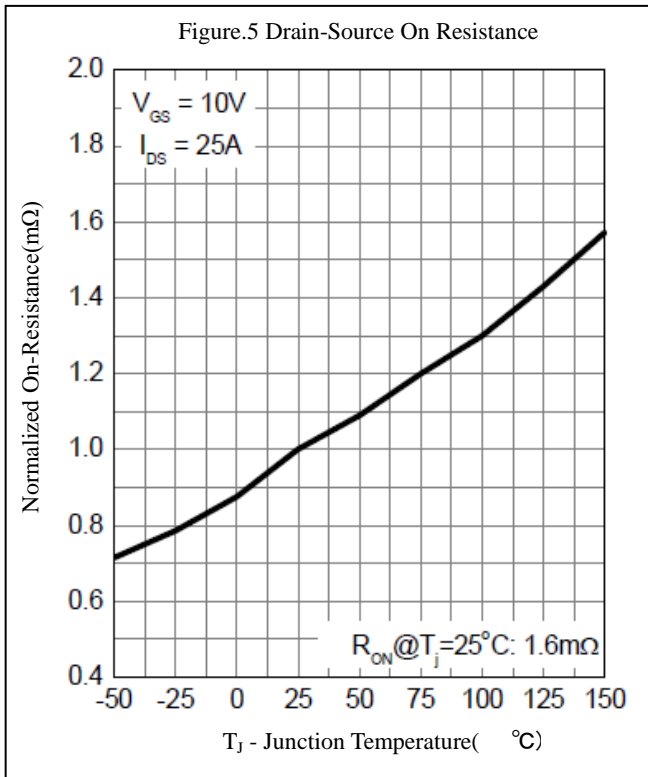
Note:

A: The value of R_{qJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$. The Power dissipation PDSM is based on R qJA and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design..

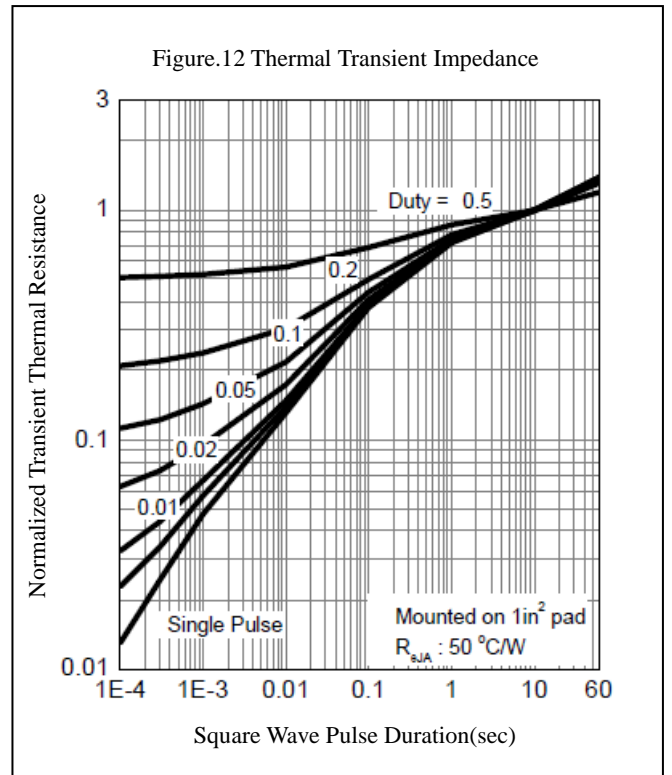
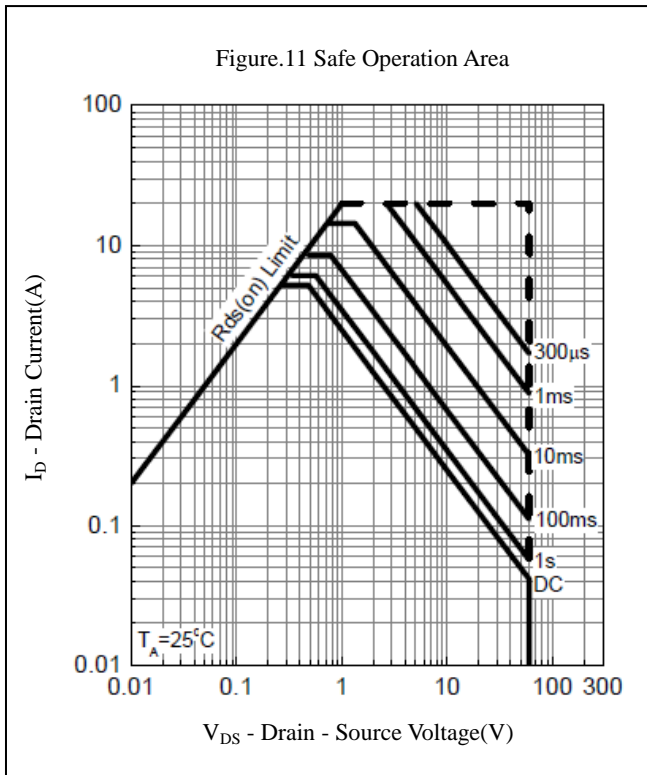
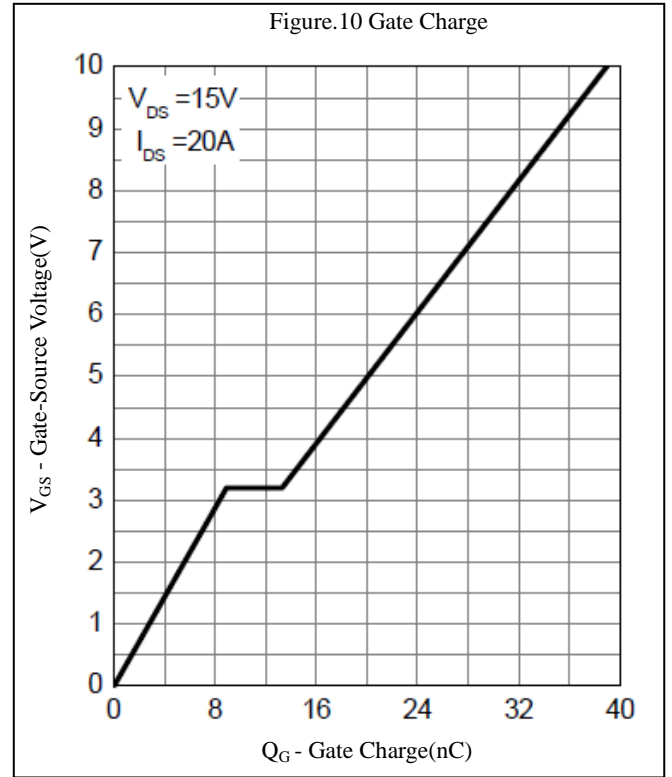
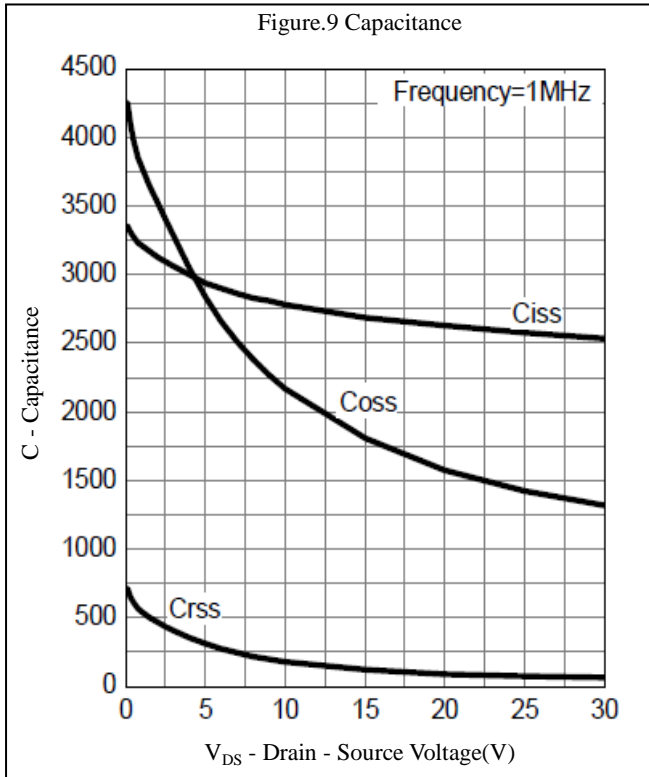
Characteristics Curve



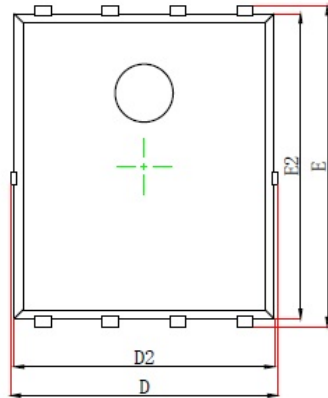
Characteristics Curve



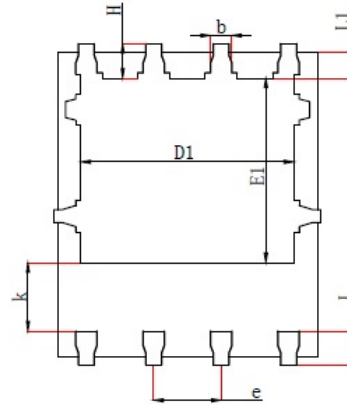
Characteristics Curve



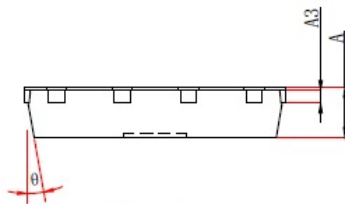
DFN 5*6-8L PACKAGE OUTLINE DIMENSIONS



Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	DFN5×6-8L			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.80	0.028	0.031
A1	0.00	0.05	0.000	0.002
A3	0.200REF		0.008REF	
b	0.25	0.35	0.010	0.014
D	1.90	2.10	0.075	0.083
E	1.90	2.10	0.075	0.083
D1	0.90	1.10	0.035	0.043
E1	0.90	1.10	0.035	0.043
e	0.65BSC		0.026BSC	
L	0.20	0.30	0.008	0.012
K1	0.65	0.85	0.026	0.033
K2	0.20	-	0.008	-
K3	0.20	-	0.008	-
K4	0.32	-	0.013	-
K5	0.20	0.26	0.008	0.010
K6	0.45	0.55	0.018	0.022



Notice

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2. Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.