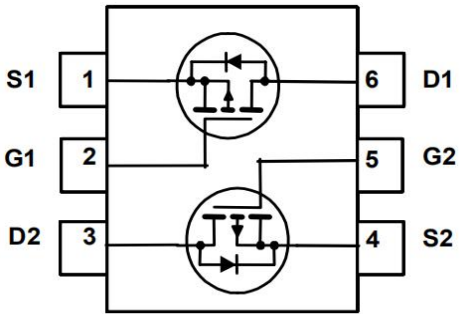
Dual P-Channel Enhancement Mode Power MOSFET

Description

The MXN2283 uses advanced trench technology and design to provide excellent RDS(ON) low gate charge and operation with gate voltages as low as 2.5V.This device is suitable for use as a load switch or in PWM applications.

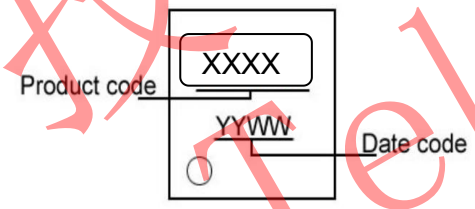


Schematic diagram

General Features

- V_{DS} =-20V，I_D =3.2A
- RDS(ON) = 68 m Ω @ VGS=-4.5V
- RDS(ON) = 95 m Ω @ VGS=-2.5V
- RDS(ON) = 140mΩ @ VGS=-1.8V

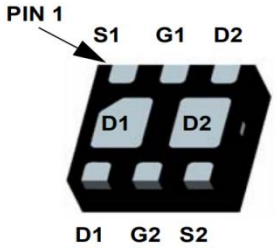
High Power and current handing capability
Lead free product is acquired
Surface Mount Package



Marking and pin Assignment

Application

PWM applications
Load switch
Power management



PDFN2x2-6L

Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous	I_D	-3.2	A
Pulsed Drain Current	I_{DM}	-10	A
Maximum Power Dissipation	P_D	1	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

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Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-20	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V	-	-	1	μA
Gate-body leakage	I_{GSS}	V_{GS}=±12V,V_{DS}=0V	-	-	±100	μA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.45	-0.7	-1	V
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-2.8A	-	68	95	mΩ
		V_{GS}=-2.5V, I_D=-2.2A	-	95	120	mΩ
		V_{GS}=-1.8V, I_D=-1.7A	-	140	170	mΩ
Dynamic Characteristics						
Input capacitance	C_{ISS}	V_{DS}=-10V ,V_{GS}=0V f=1.0MHz	-	405	-	pF
Output capacitance	C_{OSS}		-	75	-	
Reverse transfer capacitance	C_{RSS}		-	55	-	
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	VDD=10V, ID=-1A VGS=4.5V, RGEN=10Ω	-	11	-	ns
Rise time	tr		-	35	-	
Turn-off delay time	$t_{D(OFF)}$		-	30	-	
Fall time	tf		-	10	-	
Total gate charge	Qg	V_{DS}=-10V,I_D=-3A,V_{GS}=-2.5V	-	3.3	12	nC
Gate-source charge	Qgs		-	0.7	-	
Gate-drain charge	Qgd		-	1.3	-	
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=1.3A	-	-	-1.2	V
Diode Forward Current (Note 2)	I_S		-	-	1.3	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

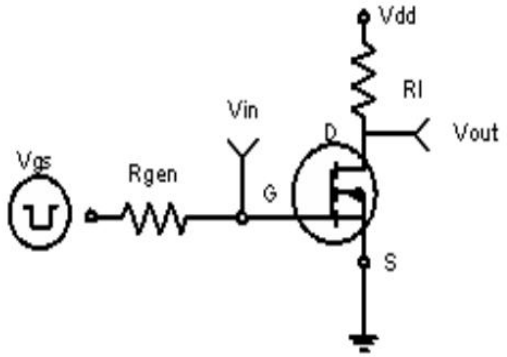


Figure 1:Switching Test Circuit

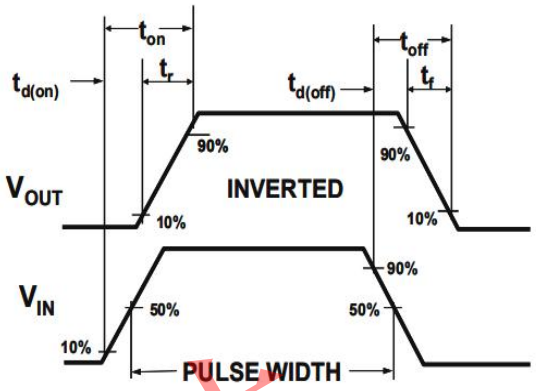


Figure 2:Switching Waveforms

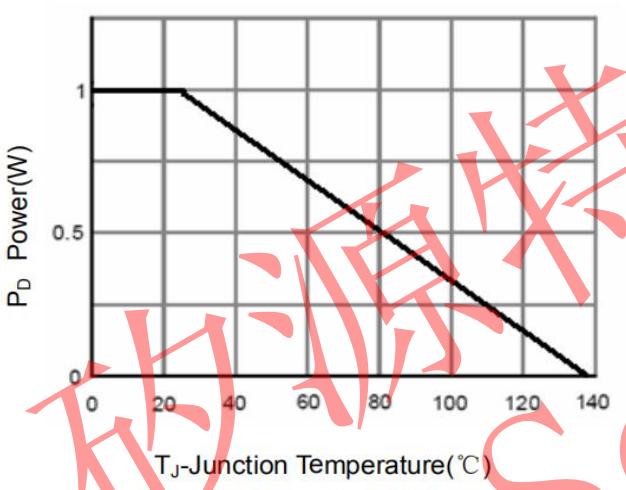


Figure 3 Power Dissipation

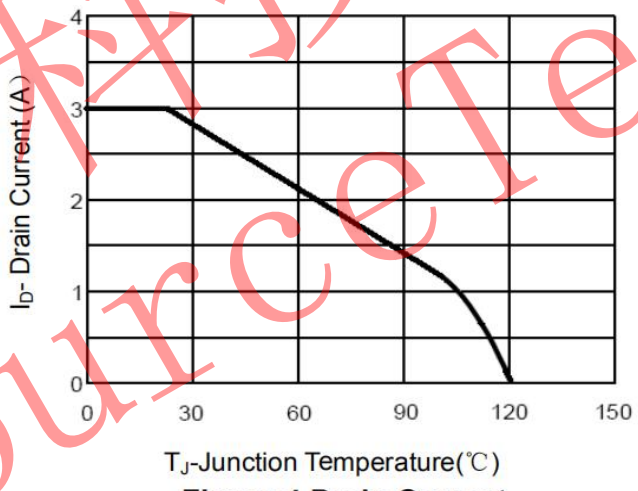


Figure 4 Drain Current

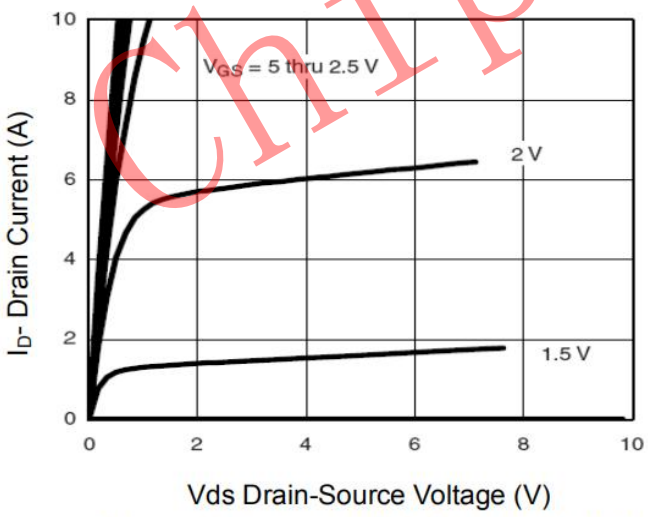


Figure 5 Output CHARACTERISTICS

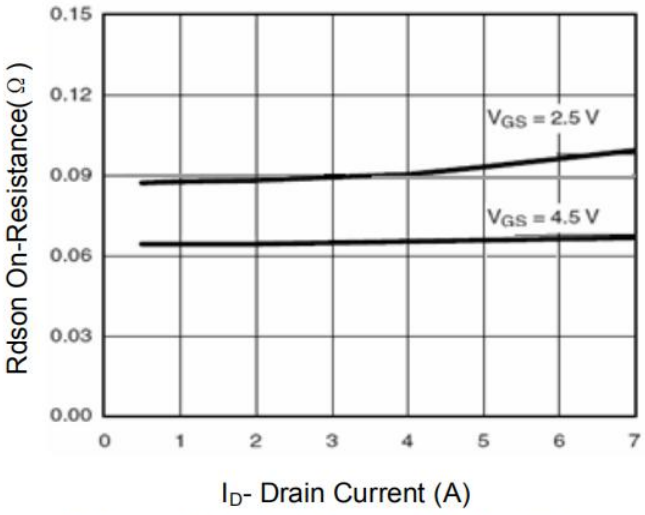


Figure 6 Drain-Source On-Resistance

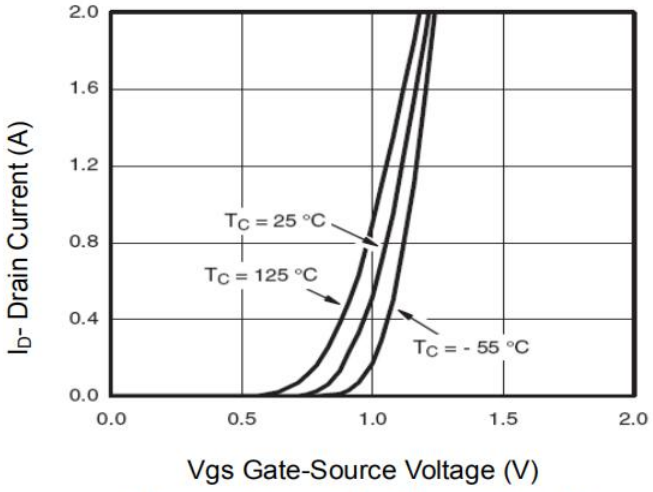


Figure 7 Transfer Characteristics

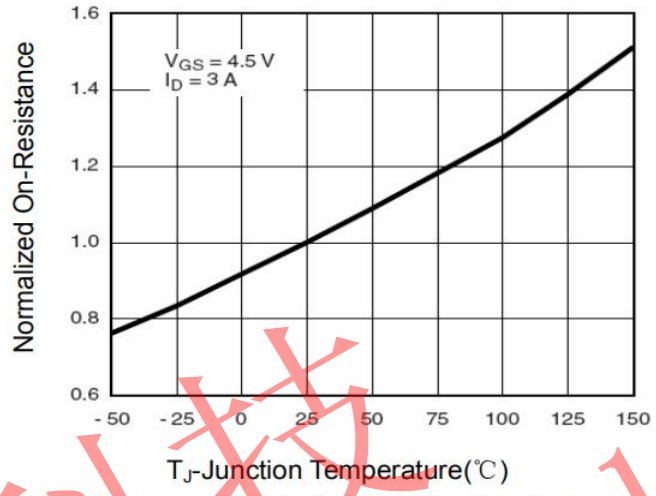


Figure 8 Drain-Source On-Resistance

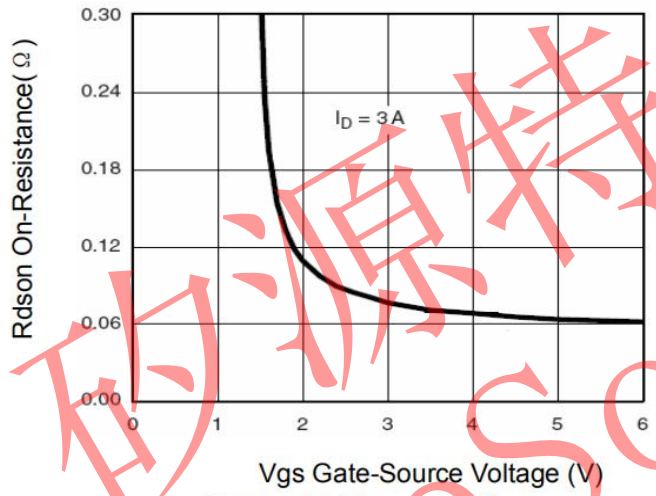


Figure 9 Rdson vs Vgs

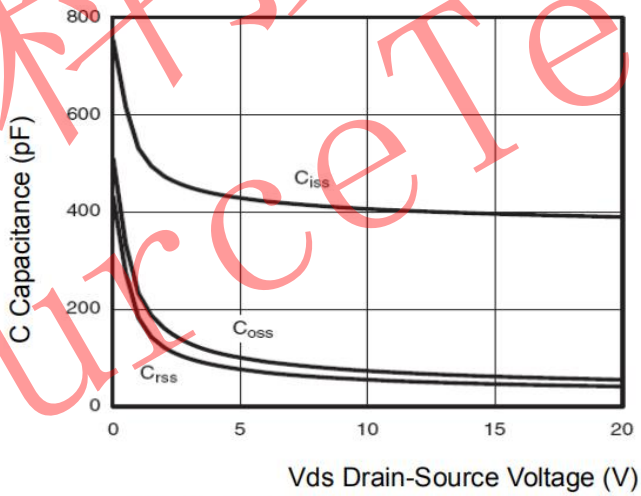


Figure 10 Capacitance vs Vds

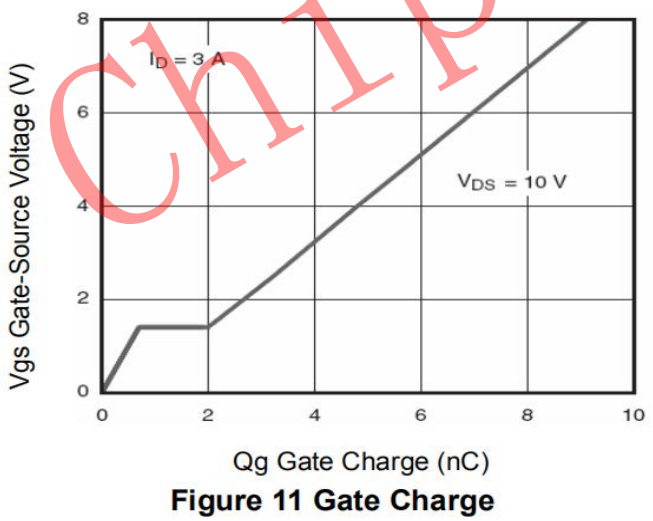


Figure 11 Gate Charge

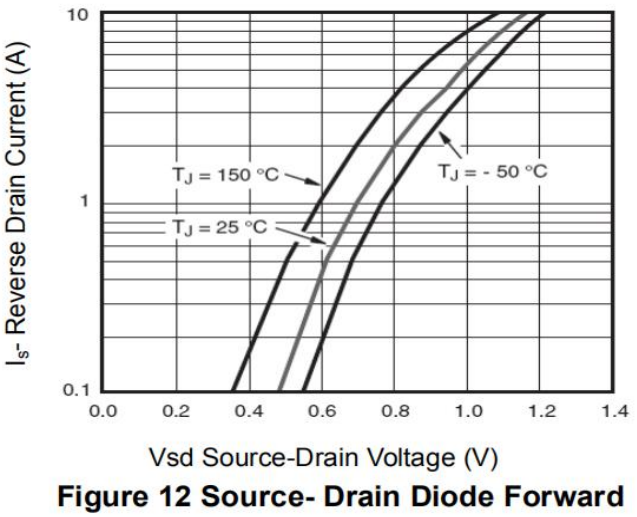


Figure 12 Source- Drain Diode Forward

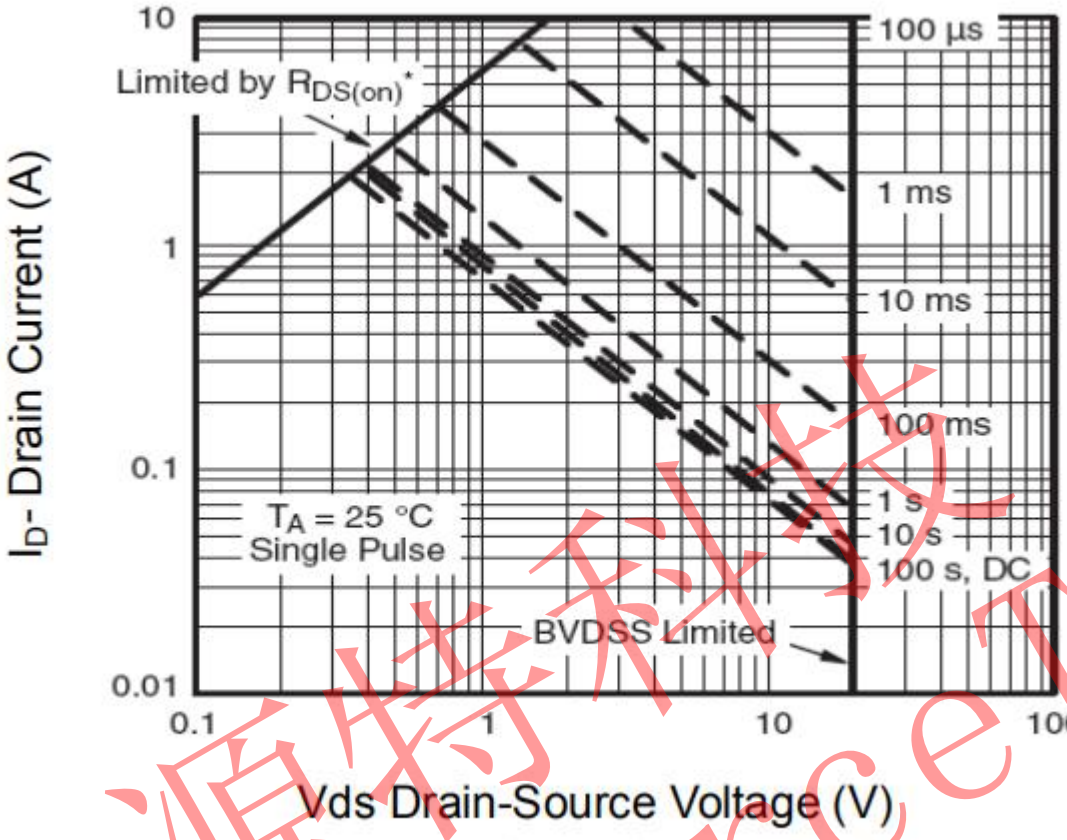


Figure 13 Safe Operation Area

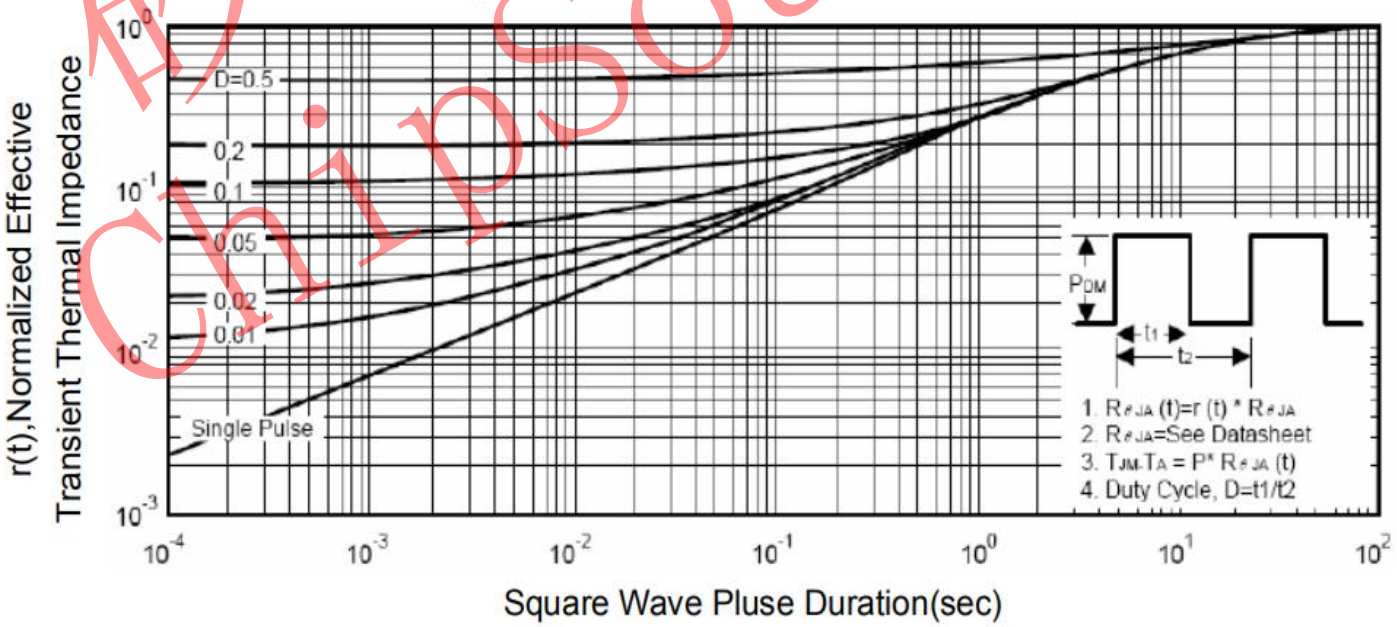
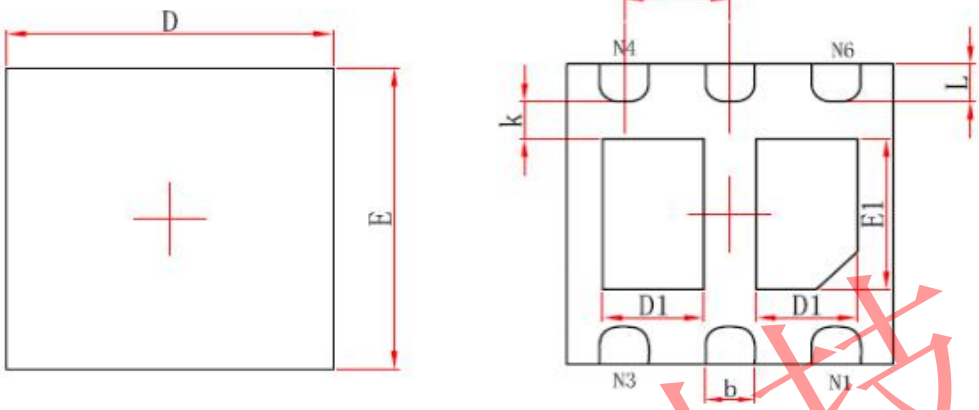
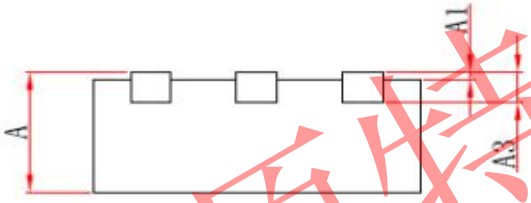


Figure 14 Normalized Maximum Transient Thermal Impedance

DFNWB2×2-6L-A(P0.65T0.75/0.85) PACKAGE OUTLINE DIMENSIONS



Top View **Bottom View**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700/0.800	0.800/0.900	0.028/0.031	0.031/0.035
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.520	0.720	0.020	0.028
E1	0.900	1.100	0.035	0.043
k	0.200MIN.		0.008MIN.	
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
L	0.174	0.326	0.007	0.013

NOTES

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.