

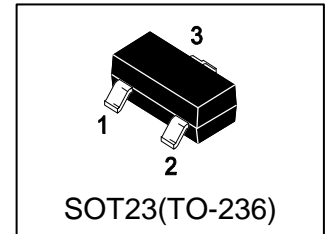
# LN2306LT1G

## S-LN2306LT1G

30V N-Channel Enhancement-Mode MOSFET

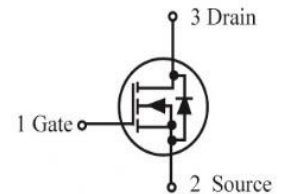
### 1. FEATURES

- $V_{DS} = 30V$
- $R_{DS(ON)}, V_{GS}@10V, I_{DS}@5.8A = 38m\Omega$
- $R_{DS(ON)}, V_{GS}@4.5V, I_{DS}@5.0A = 43m\Omega$
- $R_{DS(ON)}, V_{GS}@2.5V, I_{DS}@4.0A = 62m\Omega$
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.



### 2. APPLICATIONS

- Advanced trench process technology
- High density cell design for ultra low on-resistance



### 3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LN2306LT1G	N06	3000/Tape&Reel
LN2306LT3G	N06	10000/Tape&Reel

### 4. MAXIMUM RATINGS( $T_a = 25^\circ C$ )

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	$V_{DSS}$	30	V
Gate-to-Source Voltage – Continuous	$V_{GS}$	$\pm 12$	V
Drain Current			A
– Continuous $T_A = 25^\circ C$	$I_D$	5.8	
– Pulsed(Note 1)	$I_{DM}$	30	

### 5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Maximum Power Dissipation	PD	1.4	W
Thermal Resistance, Junction-to-Ambient(Note 2)	$R_{\theta JA}$	140	$^\circ C/W$
Junction-to-Case	$R_{\theta JC}$	105	$^\circ C/W$
Junction and Storage temperature	$T_J, T_{stg}$	$-55 \sim +150$	$^\circ C$

1. Repetitive Rating: Pulse width limited by the Maximum junction temperature.
2. 1-in<sup>2</sup> 2oz Cu PCB board.

**6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)**
**OFF CHARACTERISTICS**

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = 250μA)	V(BR)DSS	30	-	-	V
Zero Gate Voltage Drain Current (VDS=9.6V, VGS=0V)	IDSS	-	-	1	μA
Gate–Body Leakage Current, Forward (VDS = 0 V, VGS = 8 V)	IGSSF	-	-	100	nA
Gate–Body Leakage Current, Reverse (VDS = 0 V, VGS = -8 V)	IGSSR	-	-	-100	nA
Forward Transconductance (VDS = 5.0 V, ID = 5 A)	gfs	10	15	-	S

**ON CHARACTERISTICS (Note 3)**

Gate Threshold Voltage (VDS = VGS, ID = 250μA)	VGS(th)	0.7	-	1.4	V
Static Drain–Source On–State Resistance (VGS = 10 V, ID =5.8 A) (VGS = 4.5 V, ID =5 A) (VGS = 2.5 V, ID = 4 A)	RDS(on)	- - -	31 34 45	38 43 62	mΩ

**DYNAMIC CHARACTERISTICS**

Input Capacitance (VGS = 0 V, f = 1.0MHz, VDS= 15 V)	Ciss	-	602	-	pF
Output Capacitance (VGS = 0 V, f = 1.0MHz, VDS= 15 V)	Coss	-	45.3	-	pF
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz, VDS= 15 V)	Crss	-	34.5	-	pF

**SWITCHING CHARACTERISTICS**

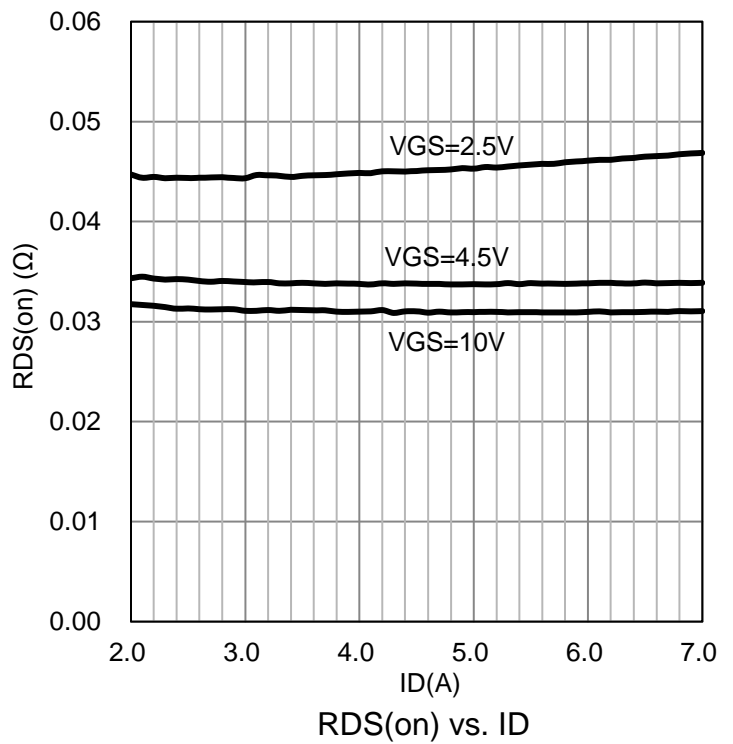
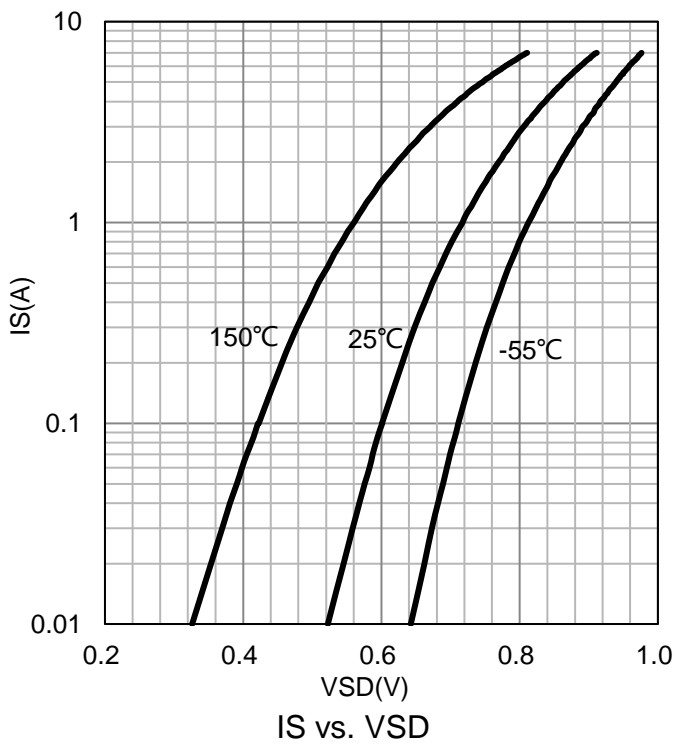
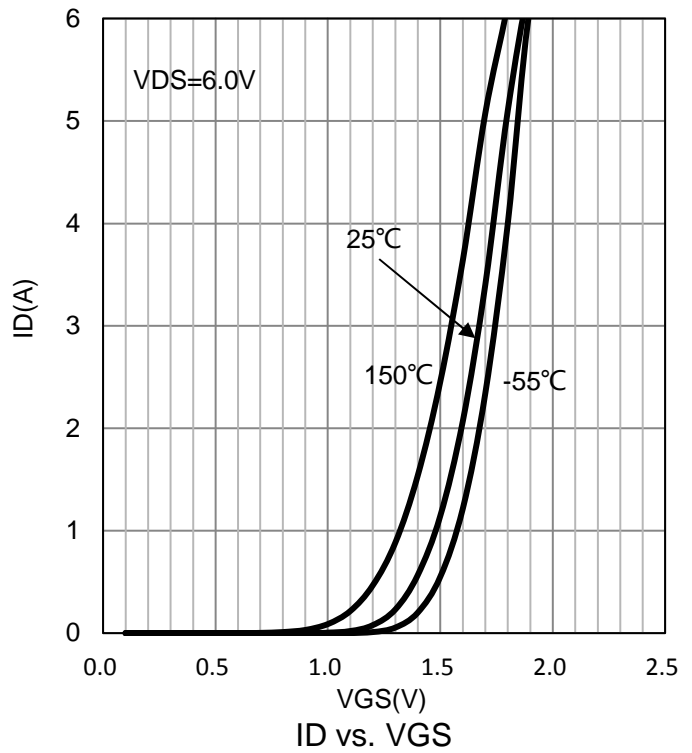
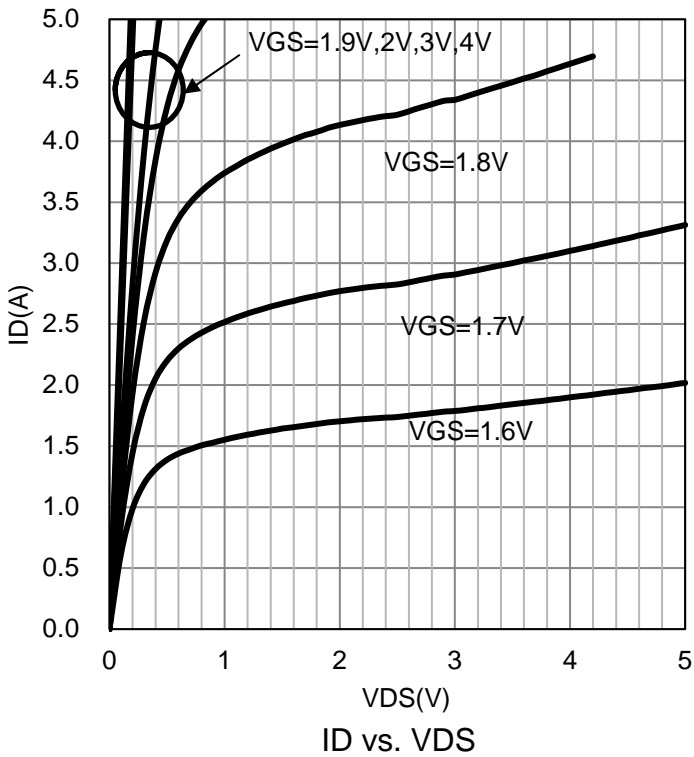
Turn-On Delay Time	(VDD = 15V, RL = 15Ω ID = 1A, VGEN = 10V, RG = 3.1Ω)	td(on)	-	3.3	-	ns
Rise Time		tr	-	1.3	-	
Turn-Off Delay Time		td(off)	-	17.2	-	
Fall Time		tf	-	1.6	-	

**SOURCE–DRAIN DIODE CHARACTERISTICS**

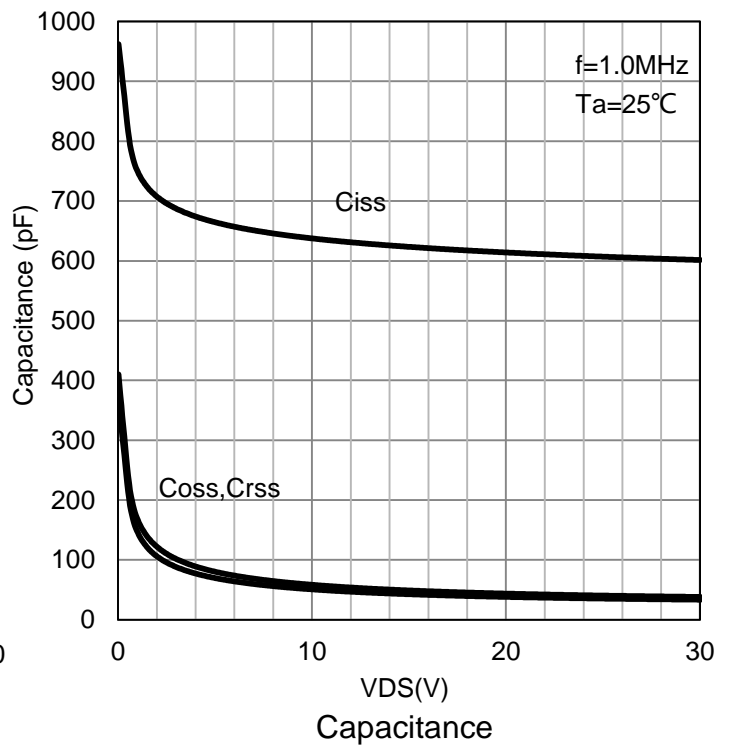
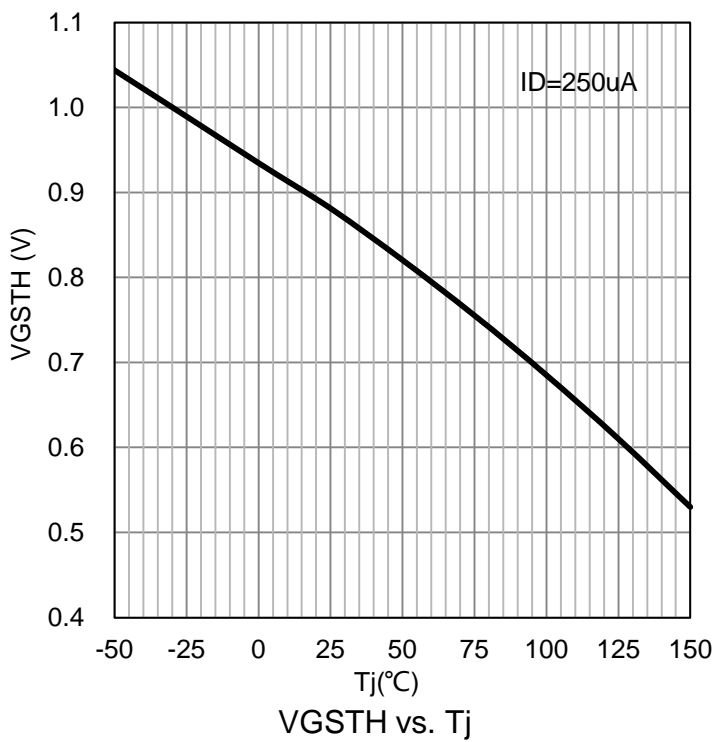
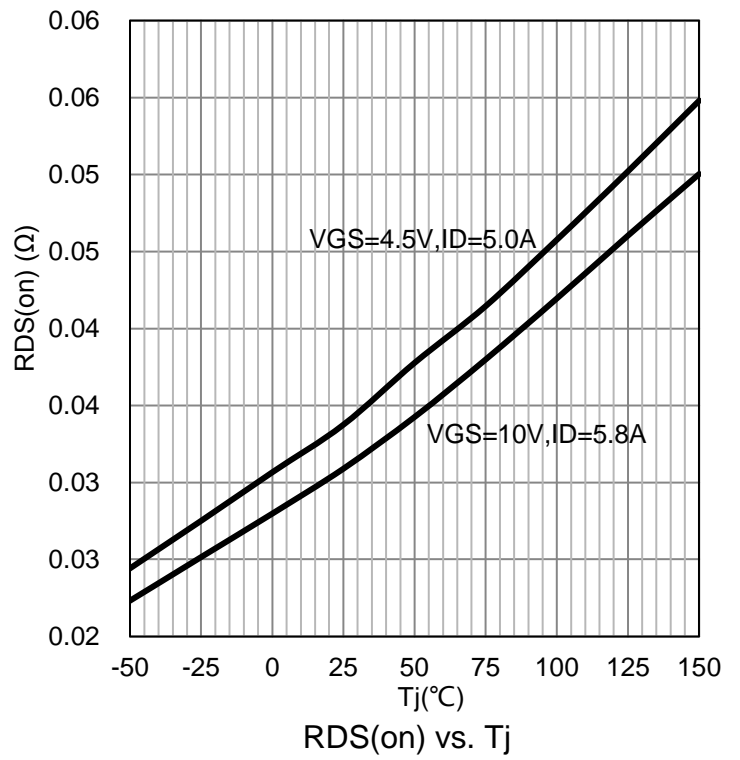
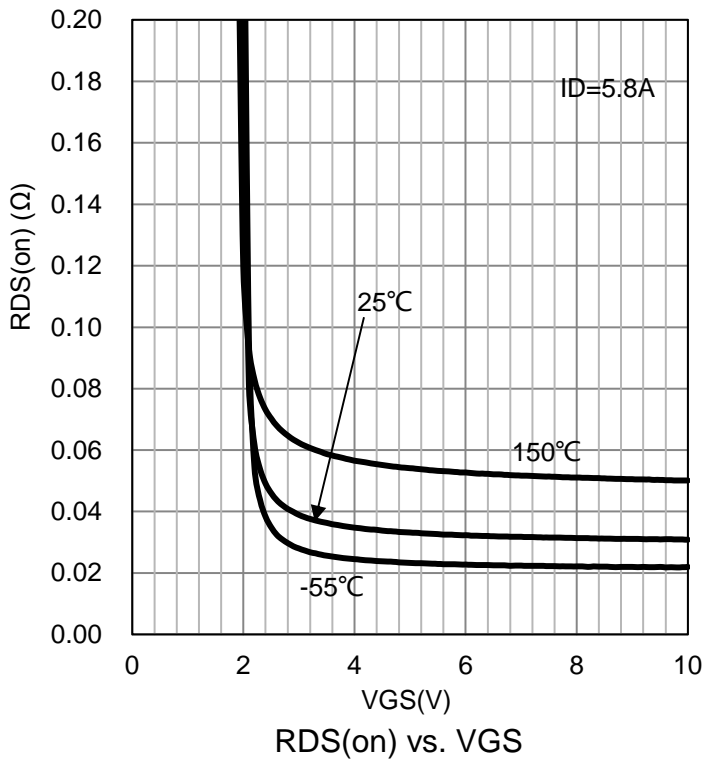
Forward Voltage (VGS = 0 V, ISD = 1 A)	VSD	-	-	1.2	V
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3.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

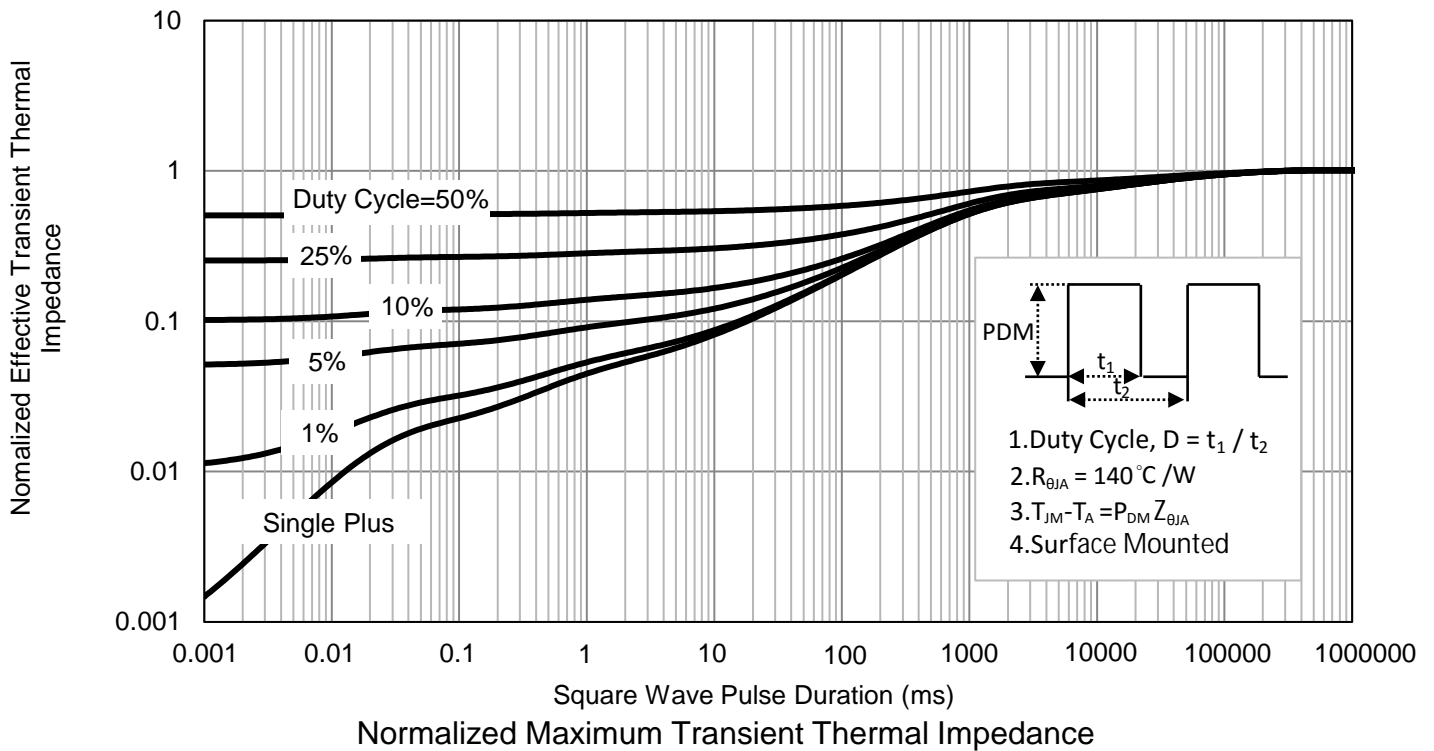
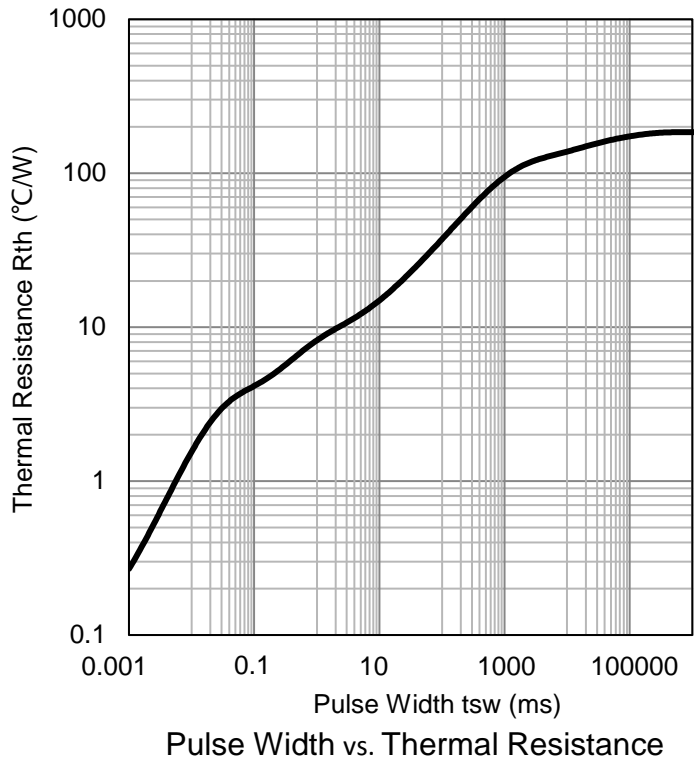
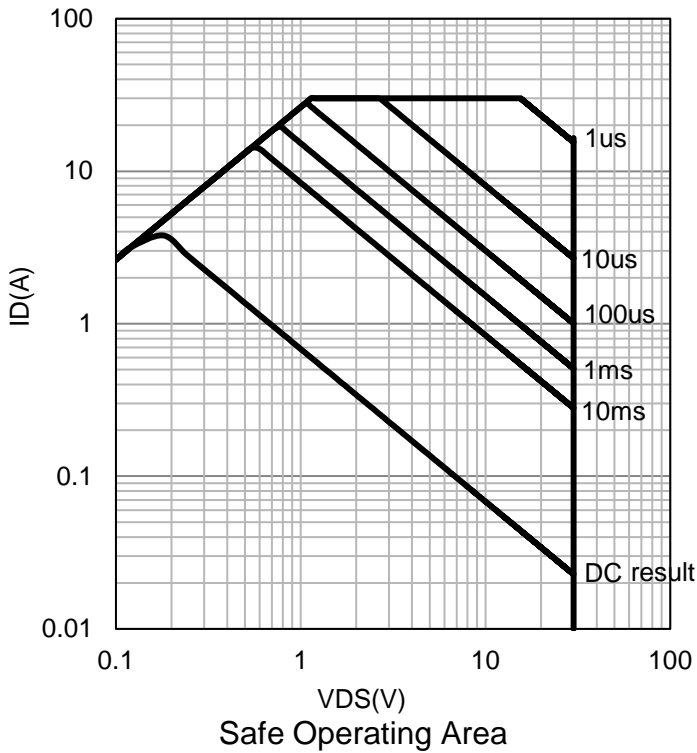
### 7. ELECTRICAL CHARACTERISTICS CURVES



**7. ELECTRICAL CHARACTERISTICS CURVES (Con.)**



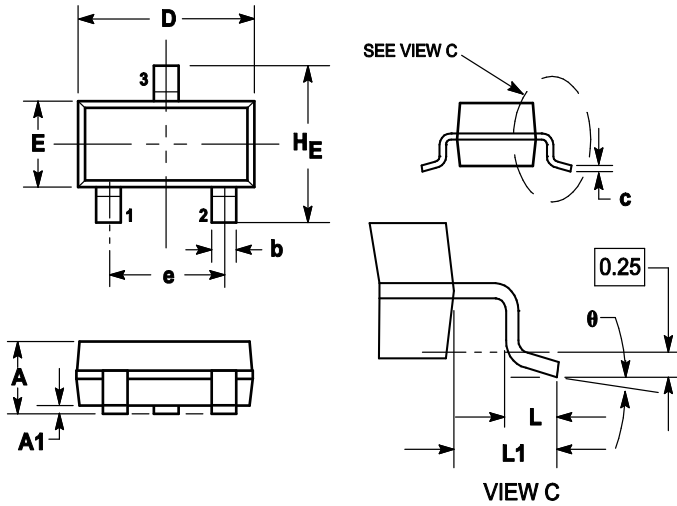
**7. ELECTRICAL CHARACTERISTICS CURVES (Con.)**



### 8. OUTLINE AND DIMENSIONS

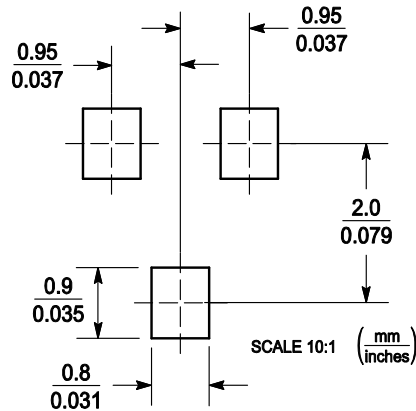
Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

### 9. SOLDERING FOOTPRINT



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