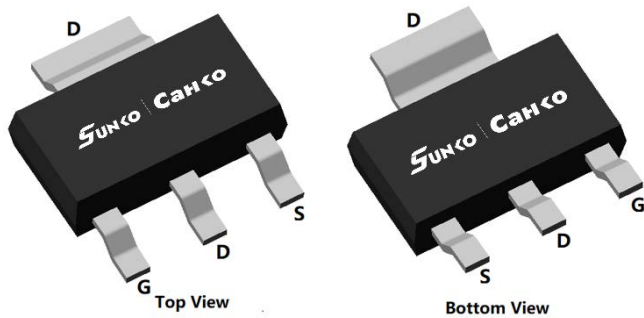
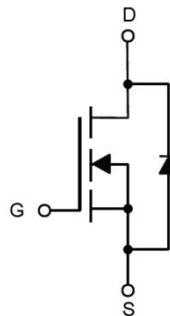


N-Channel Enhancement Mode Field Effect Transistor



SOT-223



Product Summary

- V_{DS} 100V
- I_D 5.5A
- $R_{DS(ON)}$ (at $V_{GS} = 10V$) < 100mohm
- $R_{DS(ON)}$ (at $V_{GS} = 4.5V$) < 115mohm

General Description

- Trench Power MV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- DC-DC Converters
- Power management functions

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_A = 25^\circ C$	I_D	5.5	A
	$T_A = 100^\circ C$		3.3	
Pulsed Drain Current ^A		I_{DM}	22	A
Total Power Dissipation @ $T_A = 25^\circ C$		P_D	6	W
Thermal Resistance Junction-to-Ambient ^B		$R_{\theta JA}$	21	$^\circ C / W$
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	16	$^\circ C / W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55 ~ +150	$^\circ C$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM QUANTITY (pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SCM04N10AC	F2	10130A	4000	48000	13" reel

SCM04N10AC

■ Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1	1.6	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D =3A		88	115	mΩ
		V _{GS} = 4.5V, I _D =1A		114	148	
Diode Forward Voltage	V _{SD}	I _S =4A, V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				4	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHZ		198		pF
Output Capacitance	C _{oss}			32		
Reverse Transfer Capacitance	C _{rss}			2.3		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =50V, I _D =3A		4		nC
Gate-Source Charge	Q _{gs}			0.9		
Gate-Drain Charge	Q _{gd}			1.1		
Reverse Recovery Charge	Q _{rr}	I _F =10A, di/dt=100A/us		30.1		ns
Reverse Recovery Time	t _{rr}			40		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =50V, R _L =6.4Ω R _{GEN} =3Ω		13		
Turn-on Rise Time	t _r			19		
Turn-off Delay Time	t _{D(off)}			20		
Turn-off fall Time	t _f			28		

A. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

B. R_{θJA} is the sum of the junction-to-lead and lead-to-ambient thermal resistance, where the lead thermal reference is defined as the solder mounting surface of the drain pins. R_{θJL} is guaranteed by design, while R_{θJA} is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

■ Typical Performance Characteristics

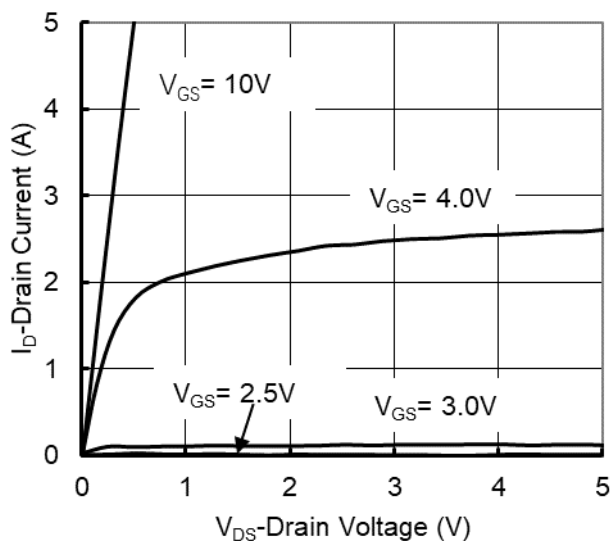


Figure 1. Output Characteristics

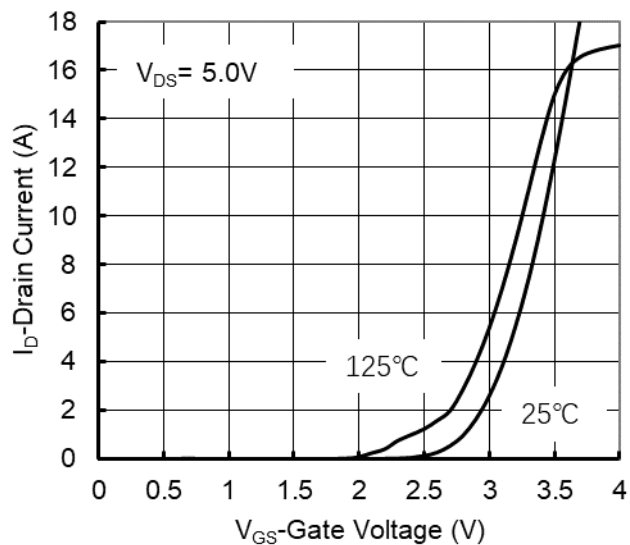


Figure 2. Transfer Characteristics

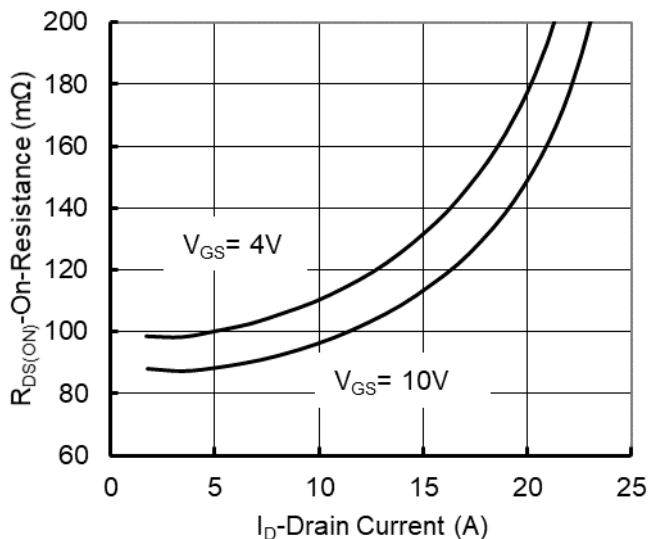


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

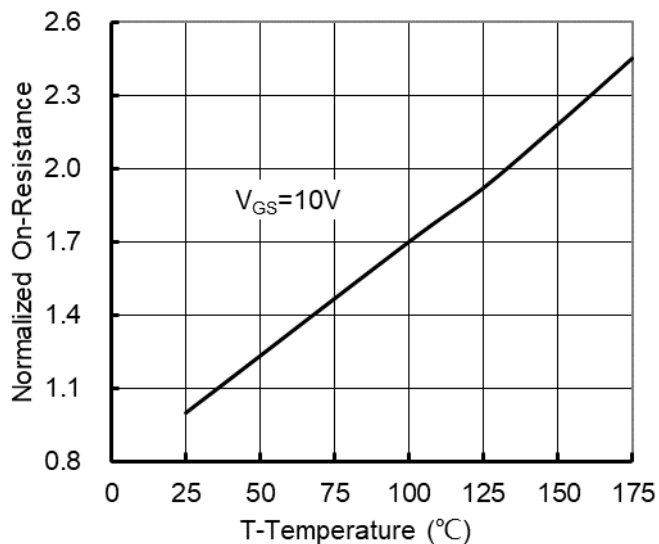


Figure 4. On-Resistance vs. Junction Temperature

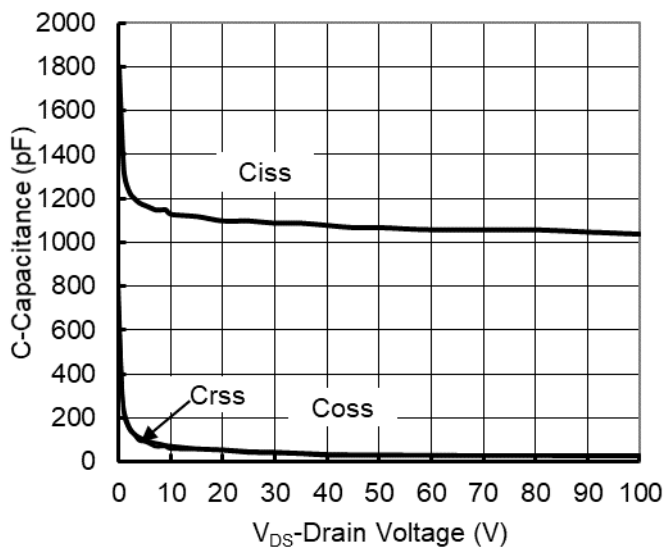


Figure 5. Capacitance Characteristics

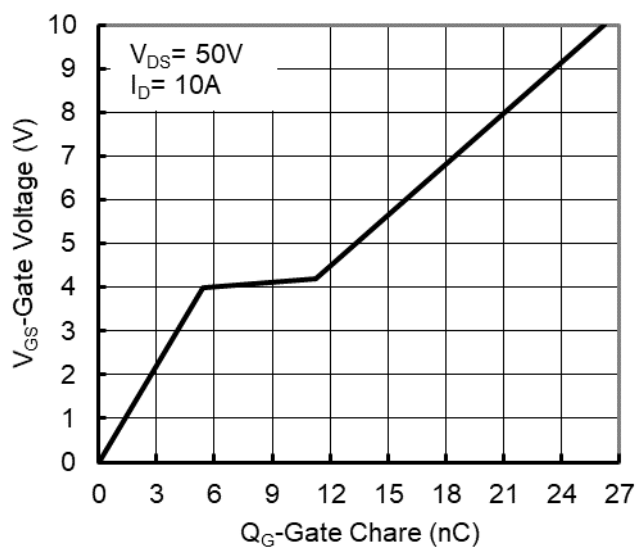


Figure 6. Gate Charge

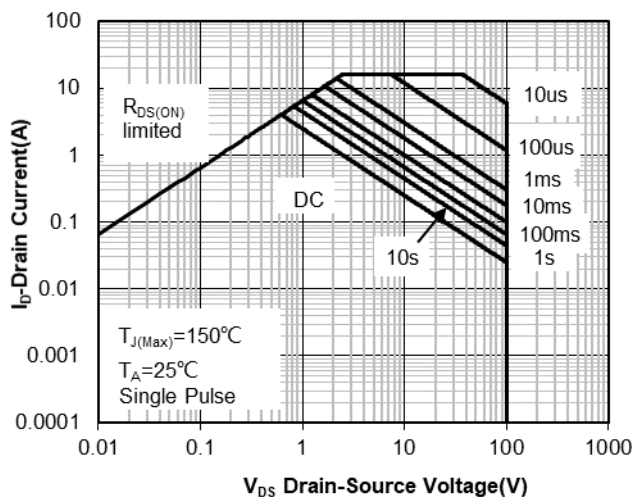


Figure 7. Safe Operation Area

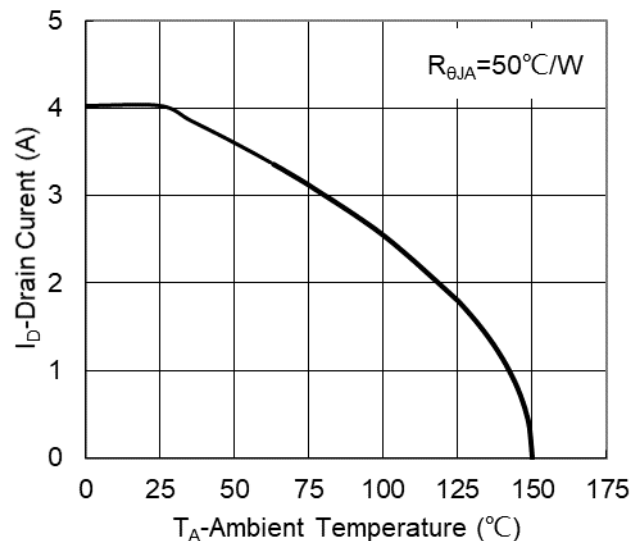


Figure 8. Maximum Continuous Drain Current vs Ambient Temperature

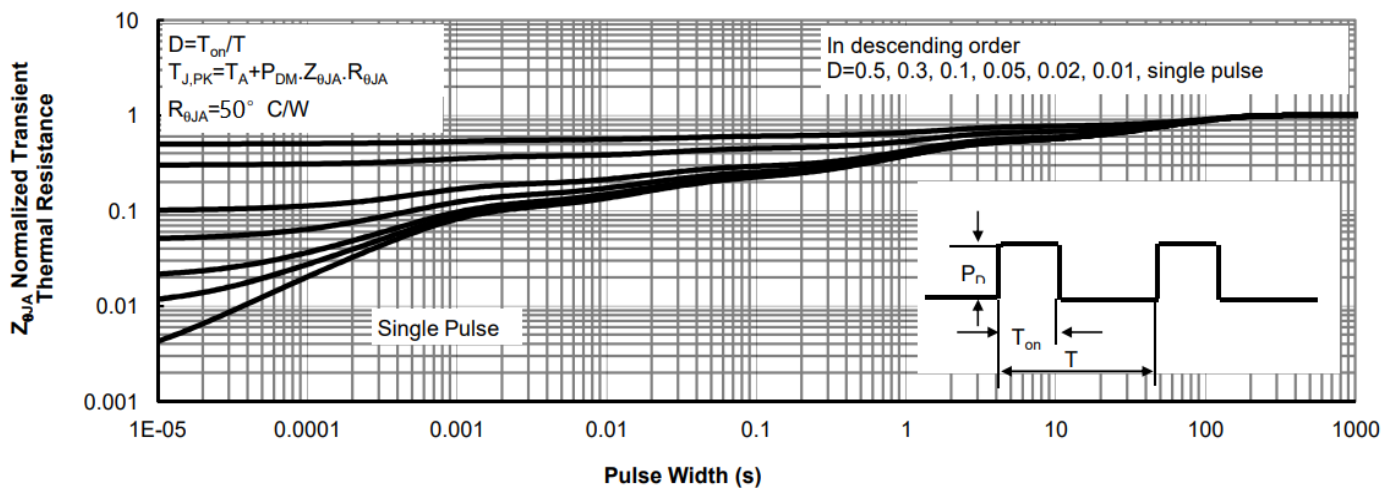
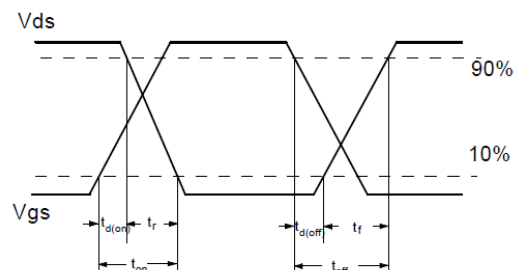
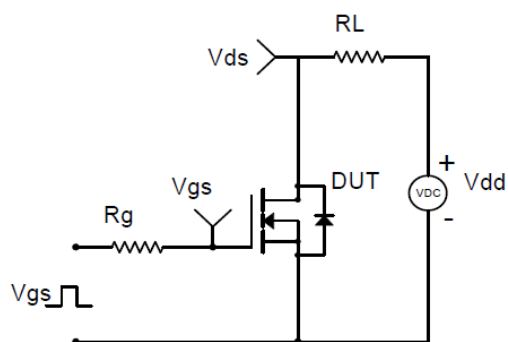
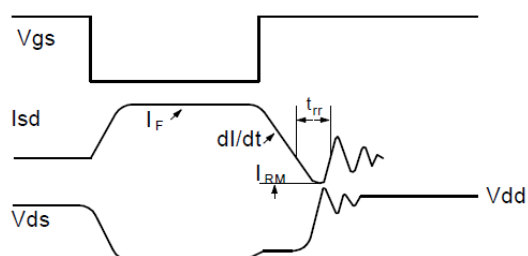
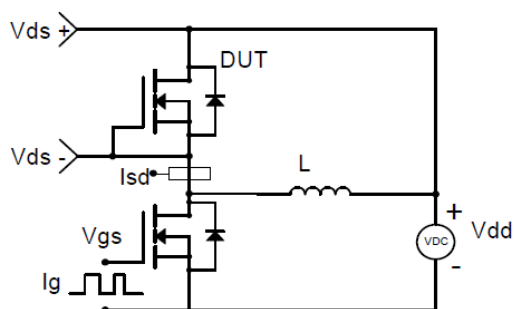


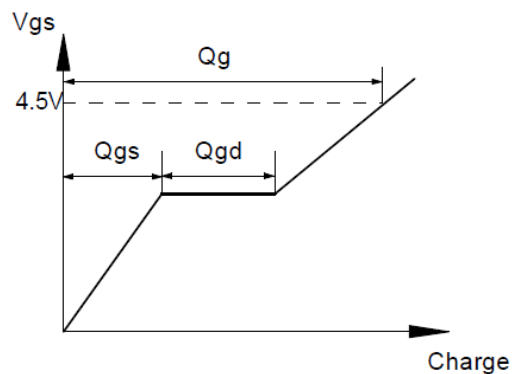
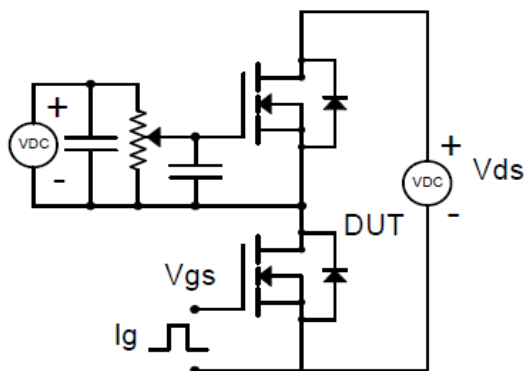
Figure 9. Normalized Maximum Transient Thermal Impedance



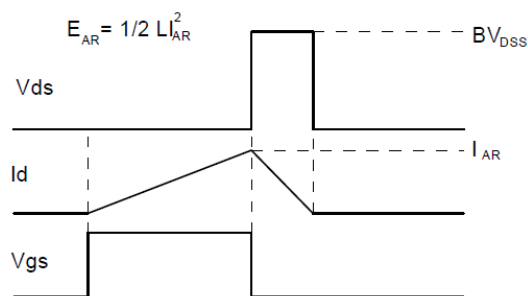
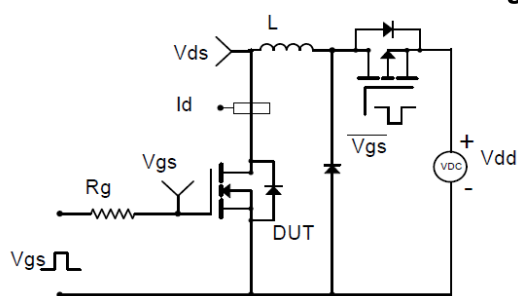
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



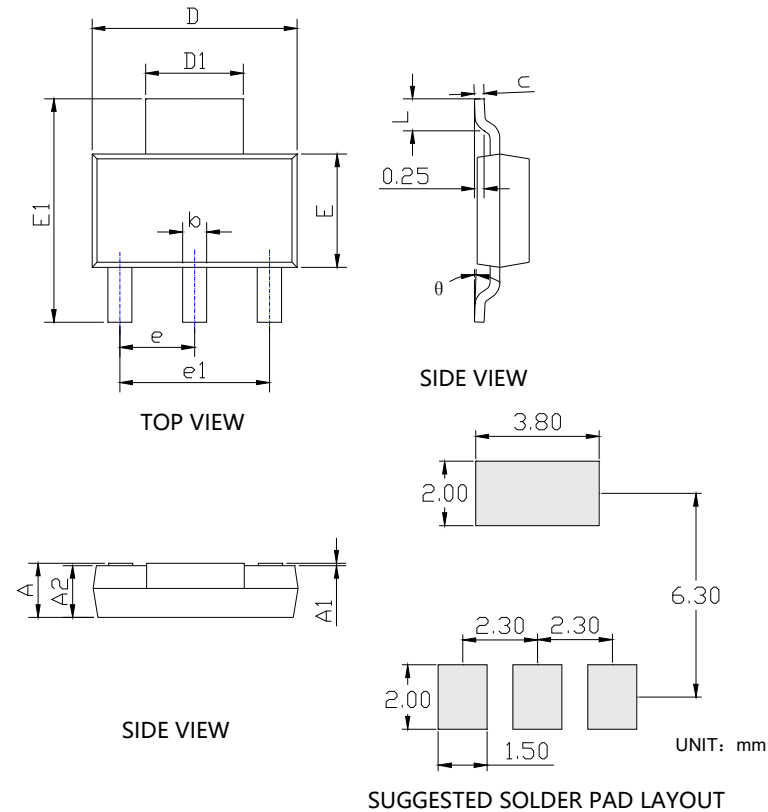
Gate Charge Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

■ SOT-223 Package information

TYPE B:

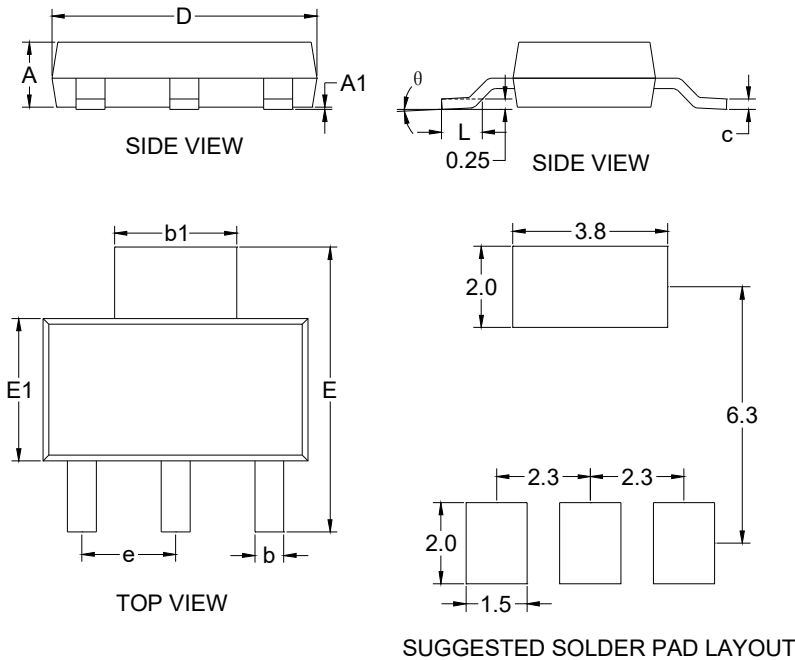


SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.060	0.071	1.520	1.800
A1	0.000	0.004	0.000	0.100
A2	0.059	0.067	1.500	1.700
b	0.026	0.032	0.660	0.820
c	0.010	0.014	0.250	0.350
D	0.244	0.252	6.200	6.400
D1	0.114	0.122	2.900	3.100
E	0.130	0.146	3.300	3.700
E1	0.269	0.278	6.830	7.070
e	0.091BSC		2.300BSC	
e1	0.177	0.185	4.500	4.700
L	0.035	0.045	0.900	1.150
θ	0°	10°	0°	10°

NOTE:

- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
- 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
- 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.

TYPE A:



DIM	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.0591	0.0670	1.5000	1.7000
A1	0.0008	0.0039	0.0200	0.1000
b	0.0259	0.0330	0.6600	0.8400
b1	0.1140	0.1220	2.9000	3.1000
c	0.0090	0.0138	0.2300	0.3500
D	0.2480	0.2640	6.3000	6.7000
E	0.2637	0.2874	6.7000	7.3000
E1	0.1290	0.1460	3.3000	3.7000
e	0.0866	0.0945	2.2000	2.4000
L	0.0295	0.0492	0.7500	1.2500
θ	0°	10°	0°	10°

Disclaimer

The information presented in this document is for reference only. Shanghai Sunco Electronics Co., Ltd reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Russiansunco or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.russiansunco.com](http://www.russiansunco.com) , or consult your nearest Russiansunco's sales office for further assistance.