

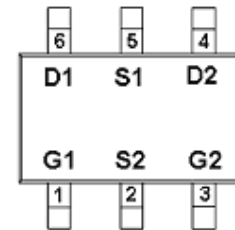
### ➤ General Description

This PAN0010WC Dual N-Channel enhancement mode power field effect transistor is the high density trench technology and this advanced technology can provide excellent  $R_{ds(On)}$  performance and efficiency for power switching and load switching application., this device also comply with the RoHS and Green Product requirement with full function reliability approved.

### ➤ Feature

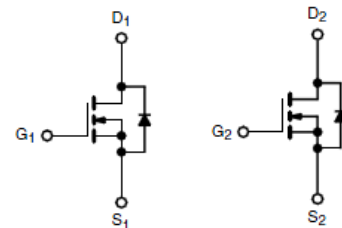
- Super high density cell design for extremely low  $R_{DS(ON)}$
- TSOP-6 package design

### ➤ TSOP-6



### ➤ Application

- Power Management in Notebook
- LED Display
- DC-DC System
- LCD Panel



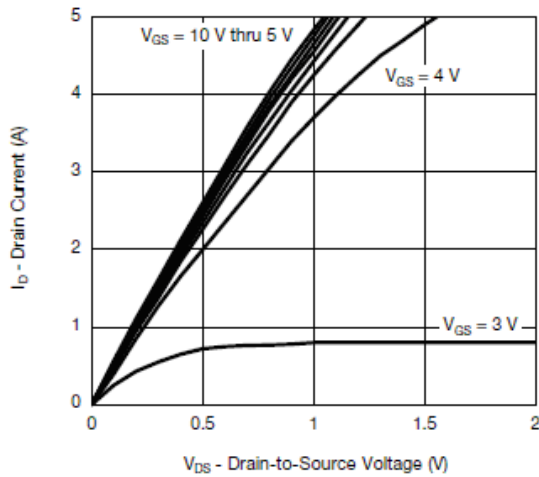
### ➤ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DSS}$	100	V
Gate –Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current( $T_J=150^\circ C$ )	$I_D$	$T_A=25^\circ C$	2.3
		$T_A=70^\circ C$	1.8
Pulsed Drain Current	$I_{DM}$	4	A
Continuous Source Current(Diode Conduction)	$I_S$	1.5	A
Power Dissipation	$P_D$	$T_A=25^\circ C$	2.0
		$T_A=70^\circ C$	1.3
Operating Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature Range	$T_{STG}$	-55/150	$^\circ C$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	120	$^\circ C/W$

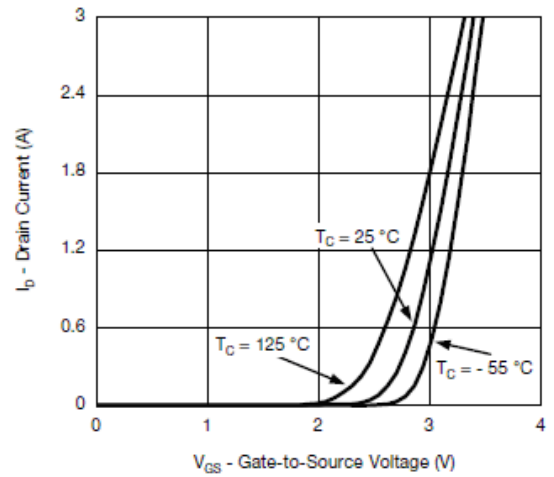
### ➤ Electrical Characteristics ( $T_A=25^\circ C$ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.0	V
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V$			1	uA
		$V_{DS}=80V, V_{GS}=0V$ $T_J=85^\circ C$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=4.5V$	5			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=2.3A$		270	310	m $\Omega$
		$V_{GS}=4.5V, I_D=1.8A$		290	320	
Forward Transconductance	$g_{FS}$	$V_{DS}=20V, I_D=1.5A$		2		S
Diode Forward Voltage	$V_{SD}$	$I_S=1.3A, V_{GS}=0V$		0.85	1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=4.5V$ $I_D \cong 1.6A$		2.8	5.8	nC
Gate-Source Charge	$Q_{gs}$			0.75		
Gate-Drain Charge	$Q_{gd}$			1.4		
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V$ $f=1MHz$		200		pF
Output Capacitance	$C_{oss}$			22		
Reverse Transfer Capacitance	$C_{rss}$			13		
Turn-On Time	$t_{d(on)}$	$V_{DD}=50V, R_L=39\Omega$ $I_D \cong 1.3A, V_{GEN}=4.5V$ $R_G=1\Omega$		25	50	ns
	$t_r$			20	50	
Turn-Off Time	$t_{d(off)}$			15	30	
	$t_f$			10	25	

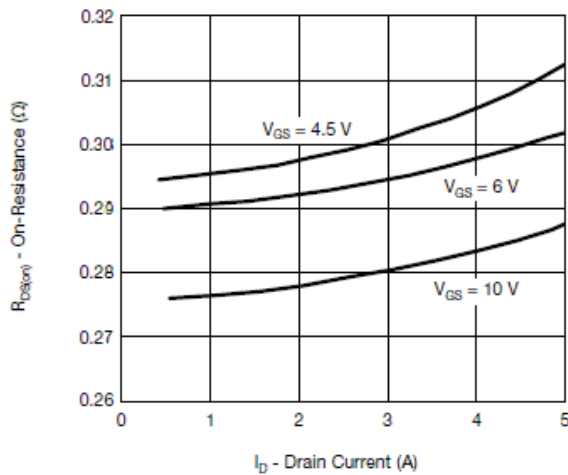
### ➤ Typical Characteristics



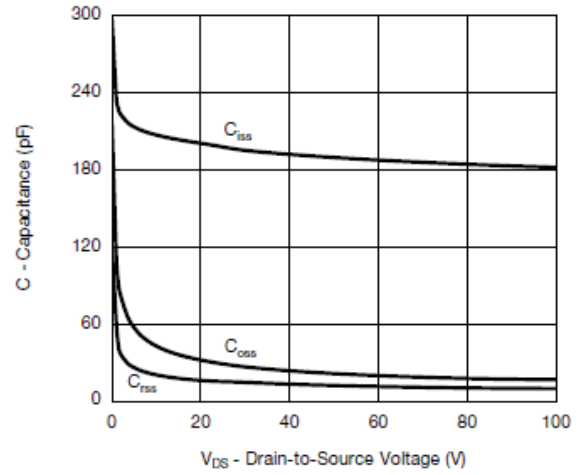
**Output Characteristics**



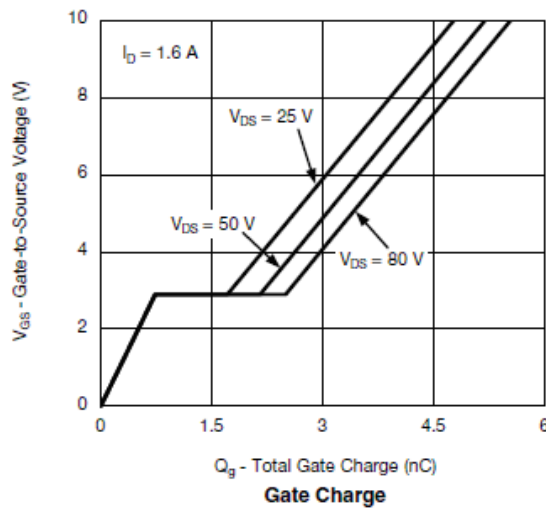
**Transfer Characteristics**



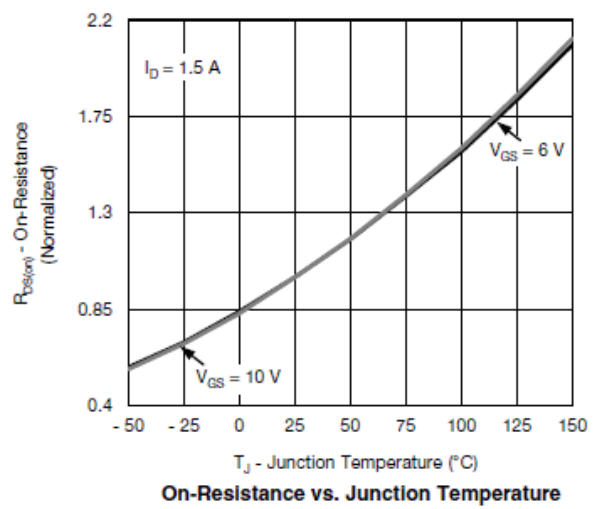
**On-Resistance vs. Drain Current and Gate Voltage**



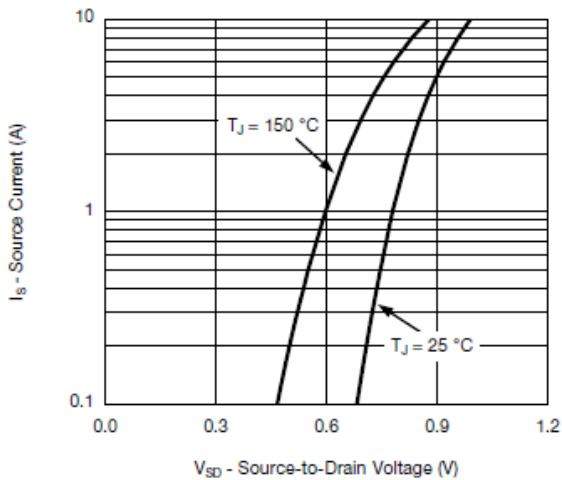
**Capacitance**



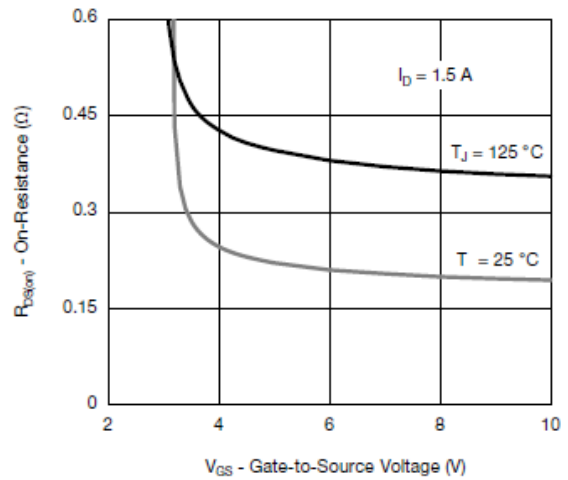
**Gate Charge**



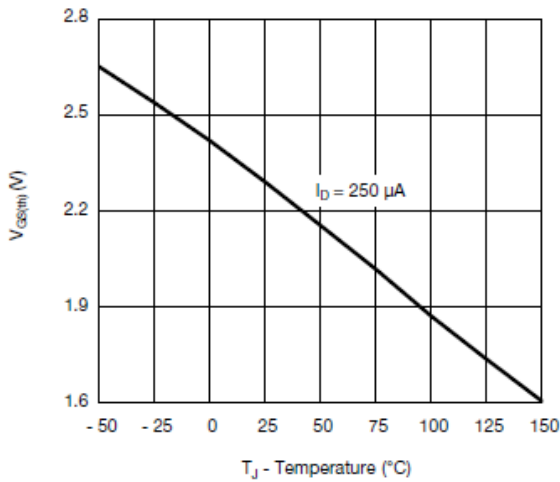
**On-Resistance vs. Junction Temperature**



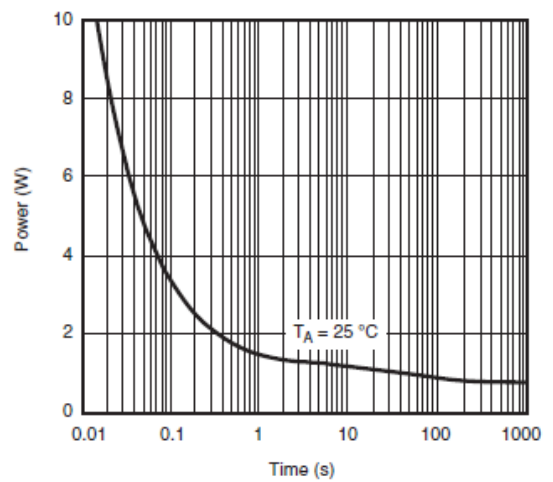
Source-Drain Diode Forward Voltage



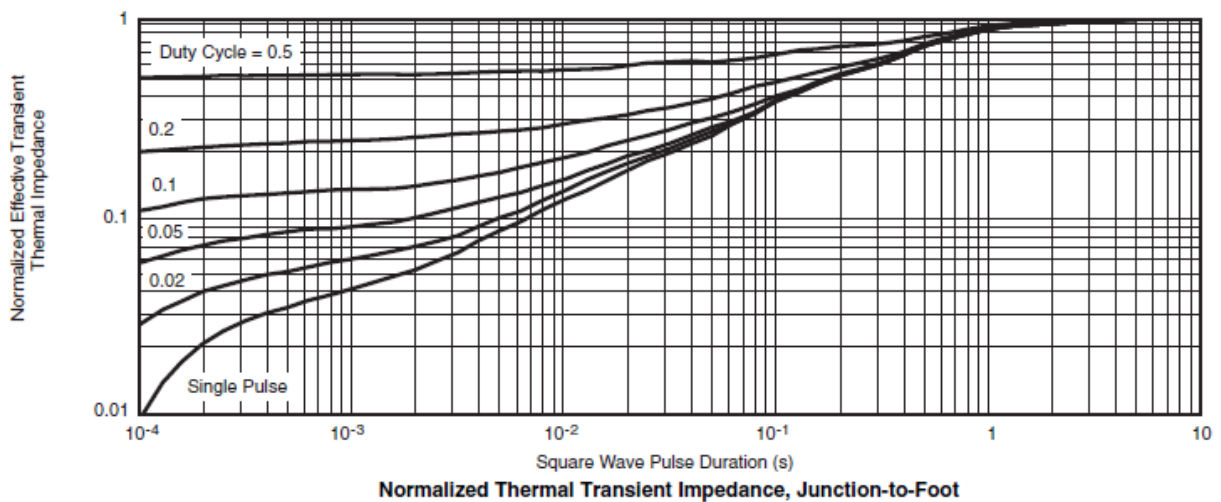
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

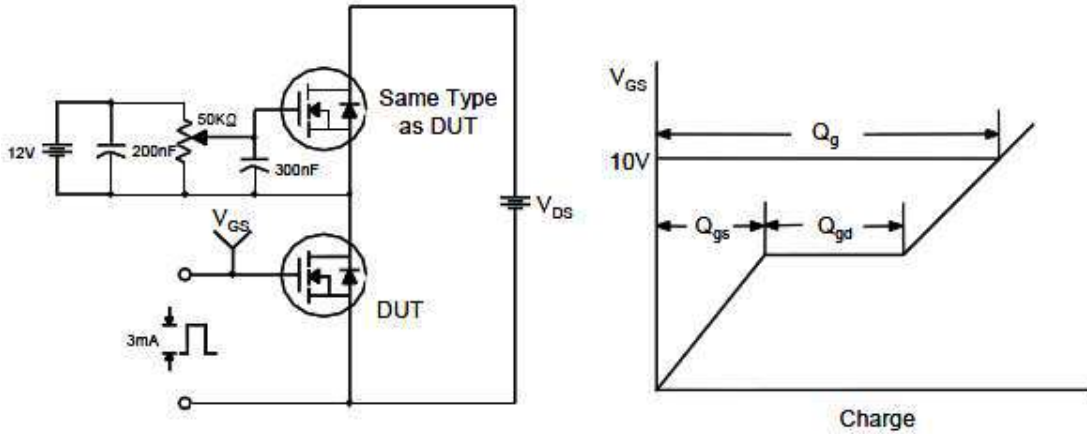


Single Pulse Power

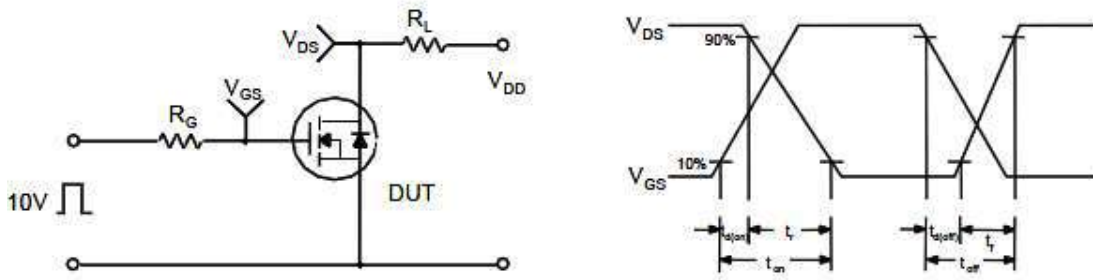


Normalized Thermal Transient Impedance, Junction-to-Foot

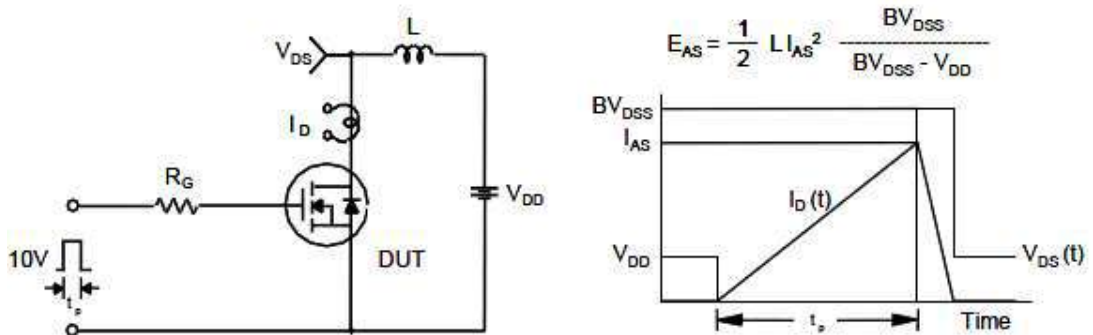
Gate Charge Test Circuit & Waveform



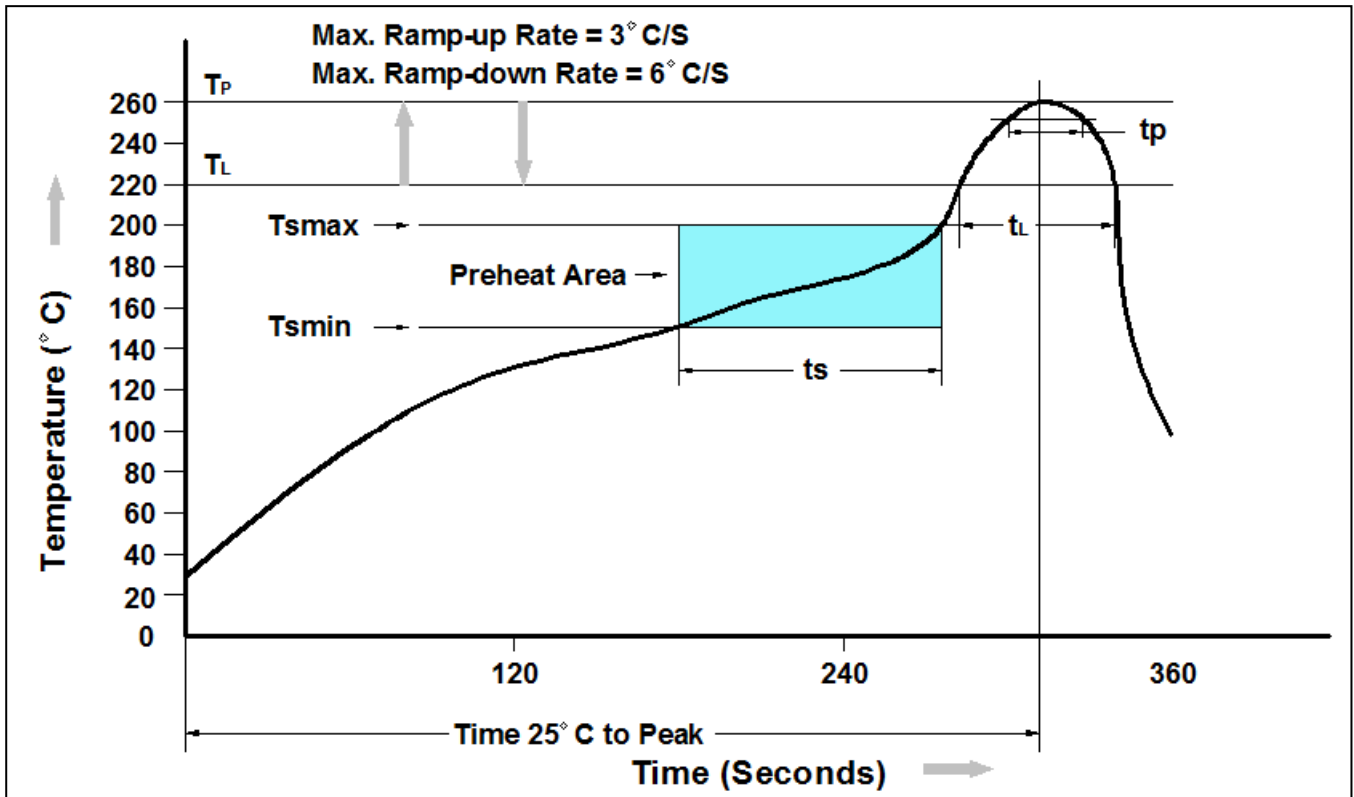
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



### ➤ Recommand IR Reflow Soldering Thermal Profile

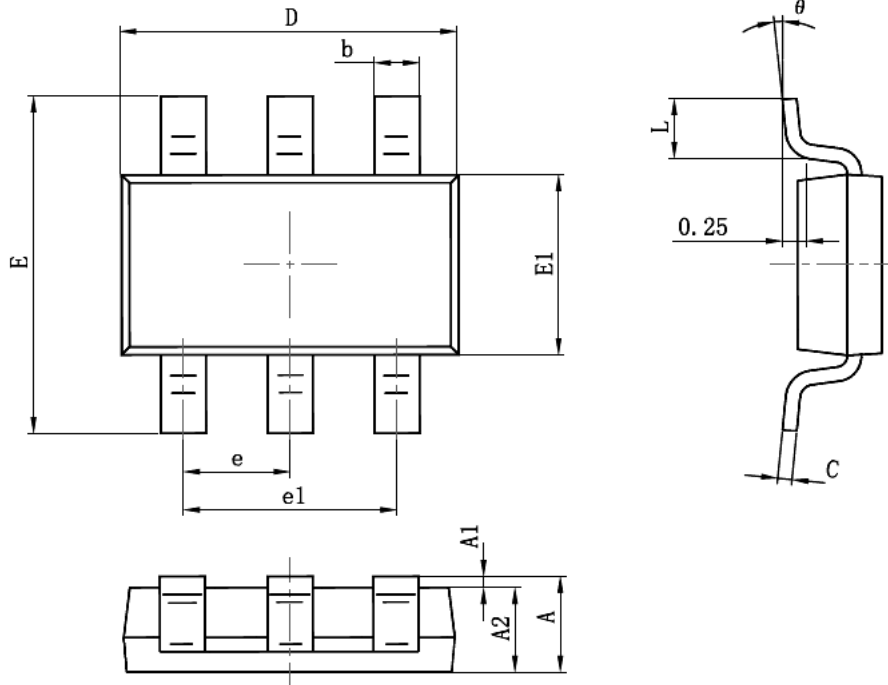


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T <sub>smin</sub> )	150°C
Temperature Max. (T <sub>smax</sub> )	200°C
Time (t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</sub> )	60-120 seconds
Average Ramp-up Rate (t <sub>L</sub> to t <sub>P</sub> )	3°C/second max.
Liquidous Temperature (T <sub>L</sub> )	217°C
Time (t <sub>L</sub> ) Maintained Above (T <sub>L</sub> )	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (t <sub>P</sub> ) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (T <sub>P</sub> to T <sub>L</sub> )	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

### ➤ Ordering Information

Part Number	Description	Quantity
PAN0010WC	TSOP-6 Reel	3000 pcs

### ➤ Package Information (TSOP-6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	---	0.900	---	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b	0.350	0.500	0.014	0.020
c	0.080	0.200	0.003	0.008
D	2.820	3.020	0.111	0.119
E1	1.600	1.700	0.063	0.067
E	2.650	2.950	0.104	0.116
e	0.95 (BSC)		0.037(BSC)	
e1	1.90 (BSC)		0.075(BSC)	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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