

**N-Channel Enhancement MOSFET****Features**

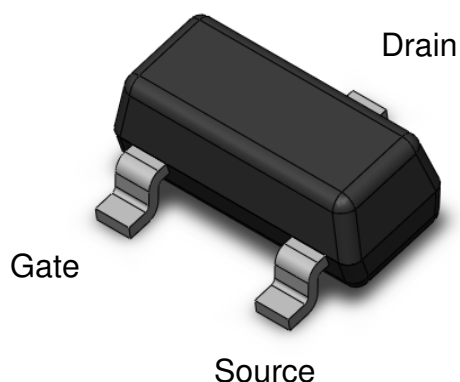
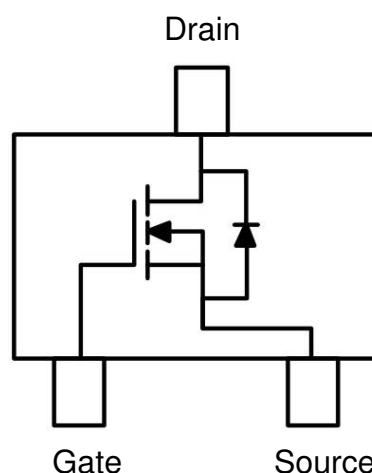
- Drain-Source Breakdown Voltage V_{DS} 30 V
- Drain-Source On-Resistance
 - $R_{DS(ON)}$ 23.5m Ω , at V_{GS} = 10V, I_{DS} = 6.0A
 - $R_{DS(ON)}$ 26.5m Ω , at V_{GS} = 4.5V, I_{DS} = 5.0A
- Continuous Drain Current at $T_A=25^{\circ}\text{C}$ I_D = 5.8A
- Advanced high cell density Trench Technology
- RoHS Compliance & Halogen Free

Applications

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

Description

The CT3400-R3 uses high performance Trench Technology to provide excellent $R_{DS(ON)}$ and low gate charge which is suitable for most of the synchronous buck converter applications .

Package Outline**Schematic**

**CT3400-R3****N-Channel Enhancement MOSFET****Absolute Maximum Rating at 25°C**

Symbol	Parameters	Ratings	Units	Notes
V_{DS}	Drain-Source Voltage	30	V	
V_{GS}	Gate-Source Voltage	±12	V	
I_D	Continuous Drain Current @ $T_A=25^{\circ}\text{C}$	5.8	A	1
I_{DM}	Pulsed Drain Current	15	A	1
P_D	Total Power Dissipation @ $T_A=25^{\circ}\text{C}$	1.4	W	2
T_{STG}	Storage Temperature Range	-55 to 150	°C	
T_J	Operating Junction Temperature Range	-55 to 150	°C	

Thermal Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$R_{\theta JA}$	Thermal Resistance Junction-Ambient (t=10s)		-	175	-	°C /W	1,4

**Electrical Characteristics** $T_A = 25^\circ\text{C}$ (unless otherwise specified)**Static Characteristics**

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$B_{V_{DS}}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V	
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA	

On Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$R_{DS(ON)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=6.0A$	-	23.5	28	m Ω	3
		$V_{GS}=4.5V, I_D=5.0A$	-	26.5	38	m Ω	
$V_{GS(TH)}$	Gate-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	0.7	-	1.4	V	3

Dynamic Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
C_{ISS}	Input Capacitance	$V_{DS}=10V,$ $V_{GS}=0V,$ $f=1MHz$	-	600	-	pF	
C_{OSS}	Output Capacitance		-	61	-		
C_{RSS}	Reverse Transfer Capacitance		-	50	-		

Switching Characteristics

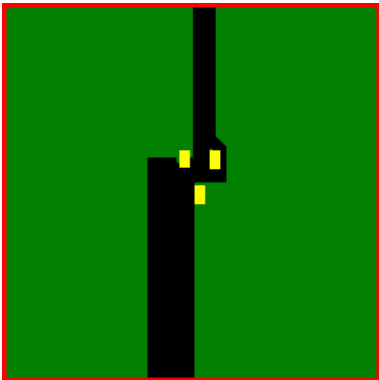
Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$T_{D(ON)}$	Turn-On Delay Time	$V_{DS}=10V,$ $V_{GS}=4.5V,$ $R_G=6\Omega,$ $I_D=5.8A$	-	2	-	ns	
T_R	Rise Time		-	31.2	-		
$T_{D(OFF)}$	Turn-Off Delay Time		-	16.7	-		
T_F	Fall Time		-	6.7	-		
Q_G	Total Gate Charge	$V_{DS}=10V,$ $V_{GS}=4.5V,$ $I_D=5.8A$	-	70	-	nC	
Q_{GS}	Gate-Source Charge		-	1.5	-		
Q_{GD}	Gate-Drain (Miller) Charge		-	2	-		



Drain-Source Diode Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V _{SD}	Body Diode Forward Voltage	V _{GS} = 0V, I _D = 1.0A			1.2	V	
I _{SD}	Body Diode Continuous Current				1.0	A	1

- Note:
- 1. The power dissipation is limited by 150°C junction temperature.
 - 2. Device mounted on a glass-epoxy board



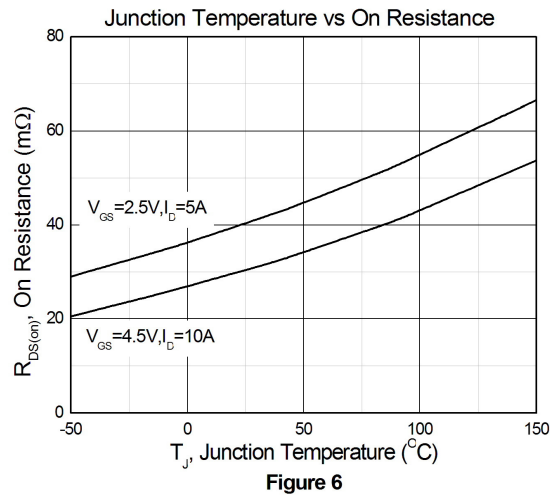
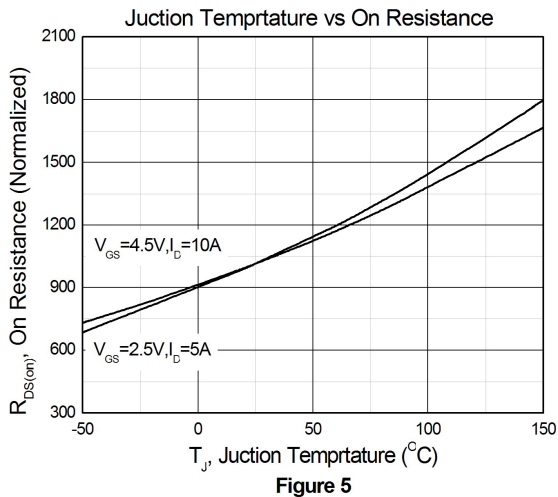
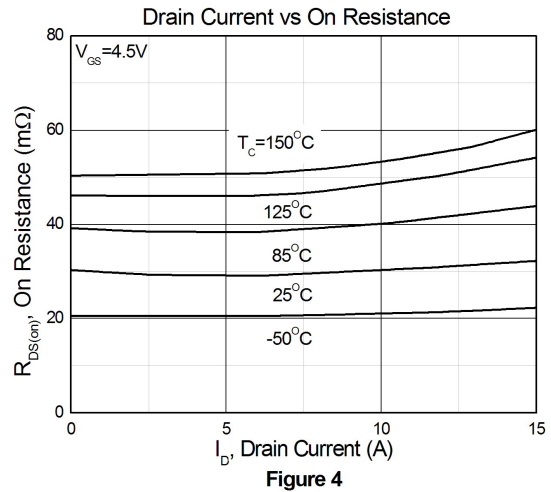
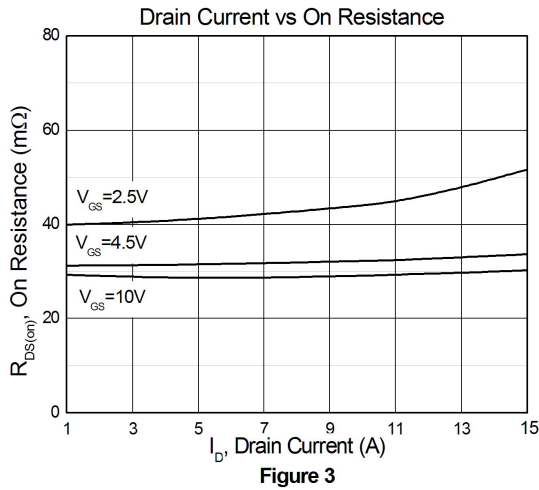
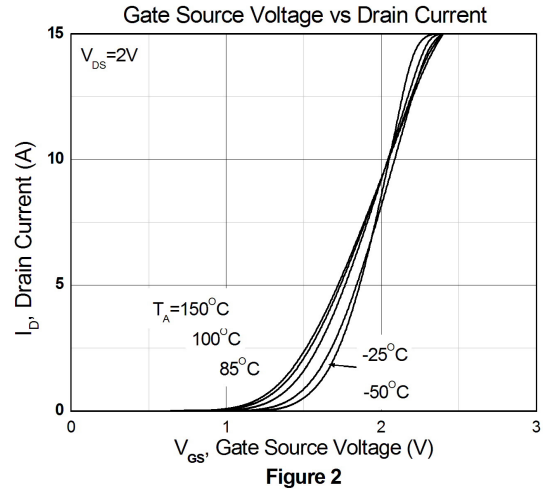
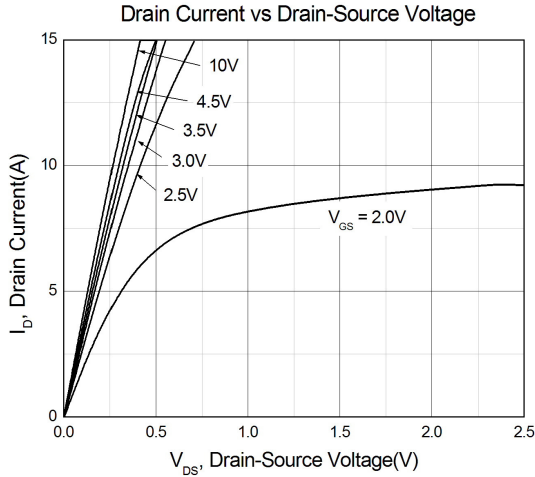
FR-4
25.4 × 25.4 mm .
2 Oz Copper

Actual Size

- 3. The data tested by pulsed , pulse width ≤ 300μs , duty cycle ≤ 2%
- 4. Thermal Resistance follow JESD51-3.



Typical Characteristic Curves



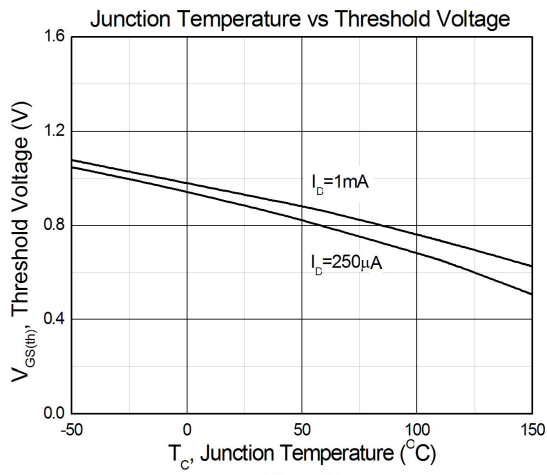


Figure 7

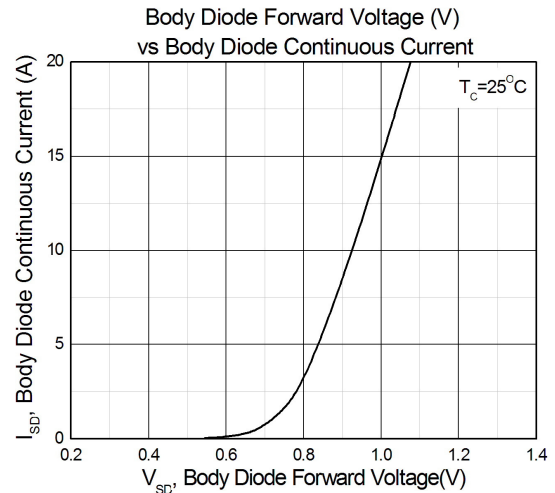


Figure 8

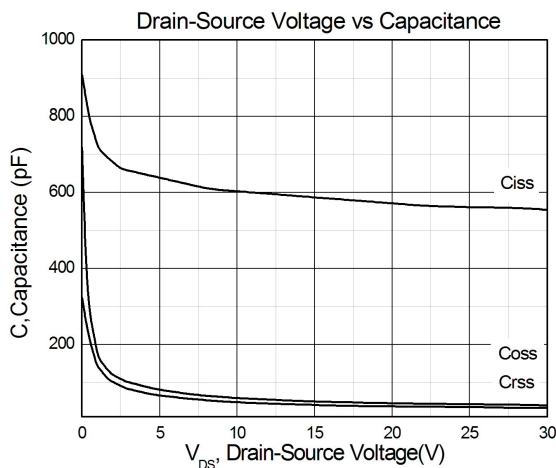


Figure 9

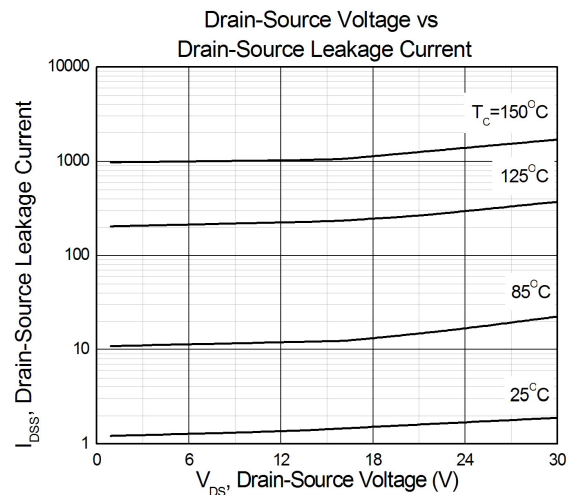


Figure 10

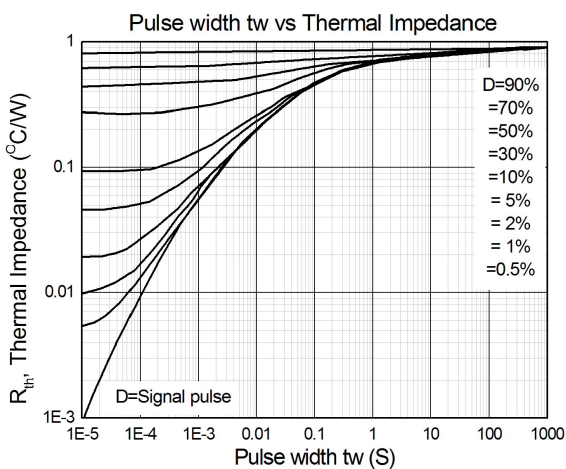


Figure 11



Test Circuits & Waveforms

Figure 12: Gate Charge Test Circuit

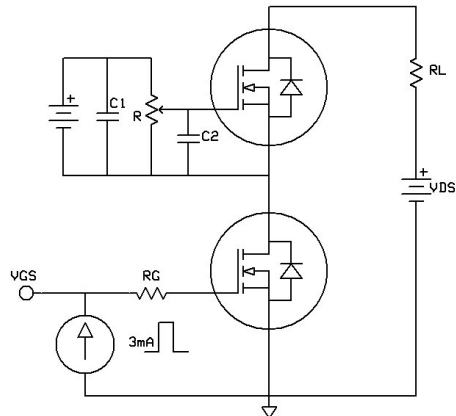


Figure 13: Gate Charge Waveform

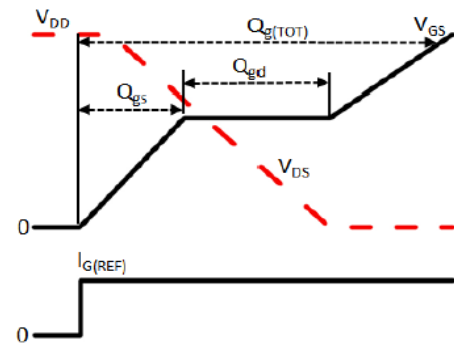


Figure 14: Switching Time Test Circuit

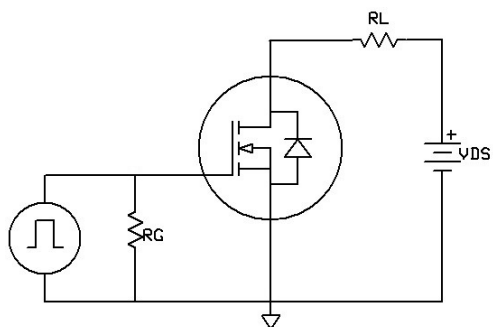
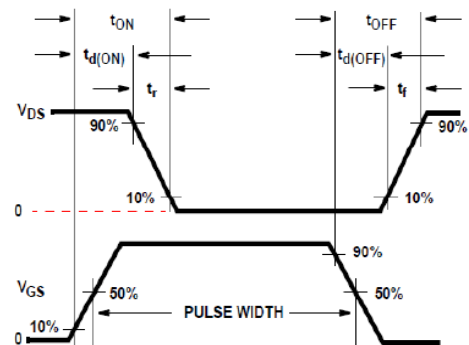
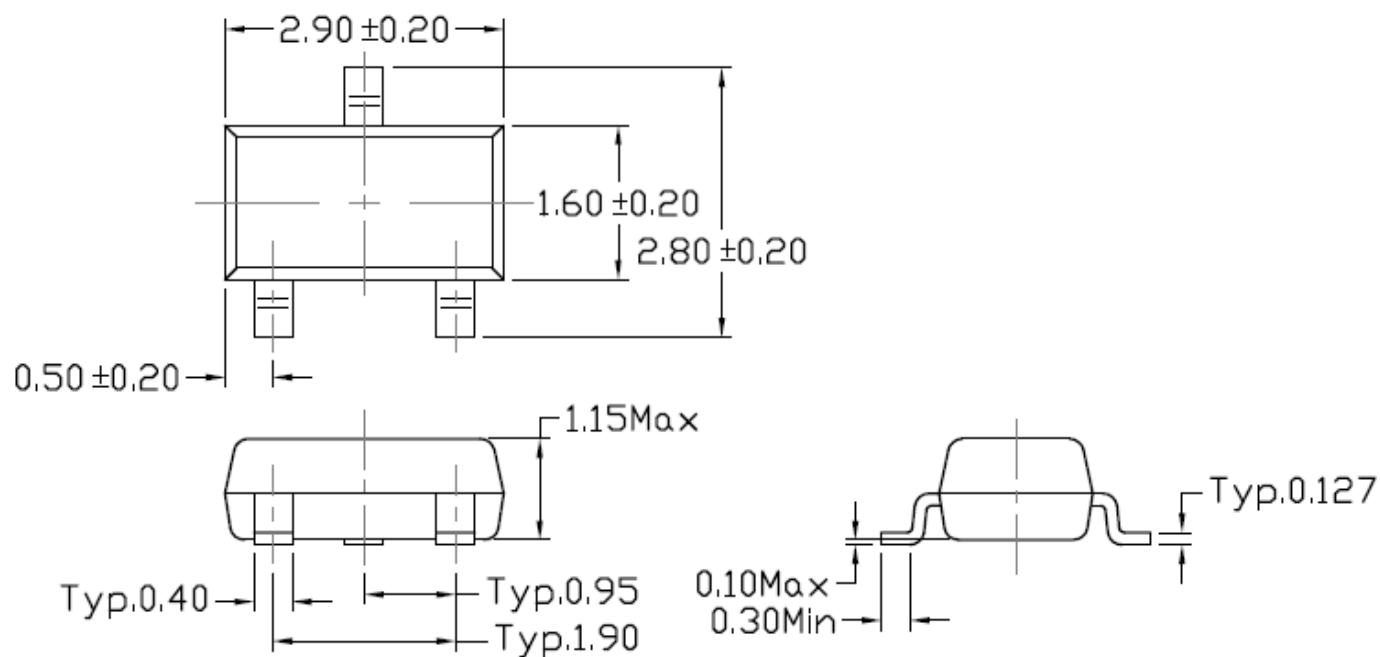
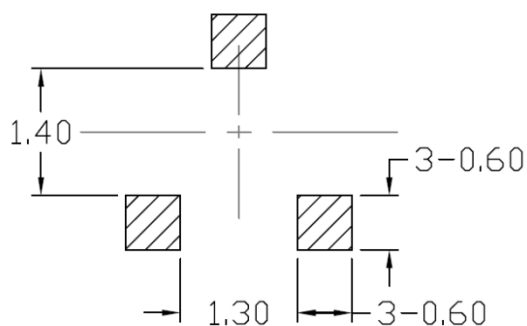


Figure 15: Switching Time Waveform



**Package Dimension (SC-59)**

Note: Dimensions in mm

Recommended pad layout for surface mount leadform

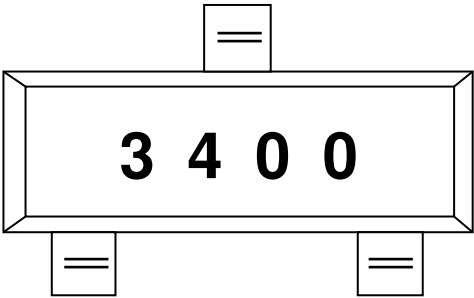
Note: Dimensions in mm



CT3400-R3

N-Channel Enhancement MOSFET

Marking Information



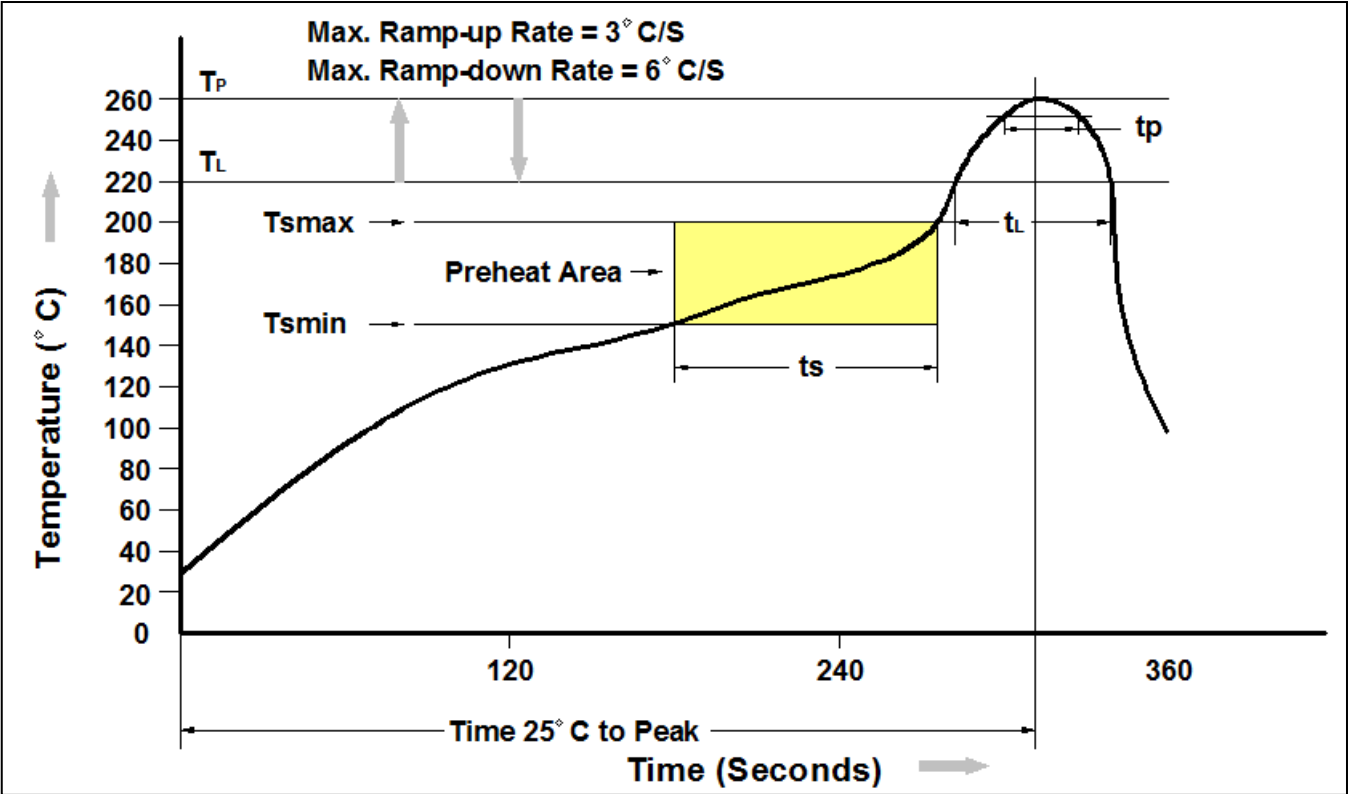
3400 : Device Number

Ordering Information

Part Number	Description	Quantity
CT3400-R3	SC-59 Reel	3000 pcs



Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	150°C
Temperature Max. (T _{smax})	200°C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Ramp-up Rate (t _L to t _P)	3°C/second max.
Liquidous Temperature (T _L)	217°C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (t _P) within 5°C of 260°C	30 seconds
Ramp-down Rate (T _P to T _L)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.



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