

**3-TERMINAL POSITIVE VOLTAGE REGULATOR**

# LM7805F3

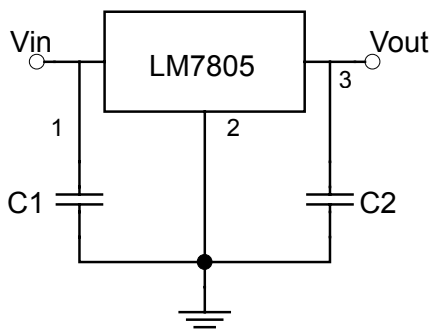
## Description

The LM7805F3 series of three-terminal positive regulators are available in the TO-263 package. These regulators can provide local on-card regulation, eliminating the distribution problems associated with single point regulation. Each employs internal current limiting, thermal shutdown and safe operating area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver up to 1.5A of output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.

## Absolute Maximum Ratings

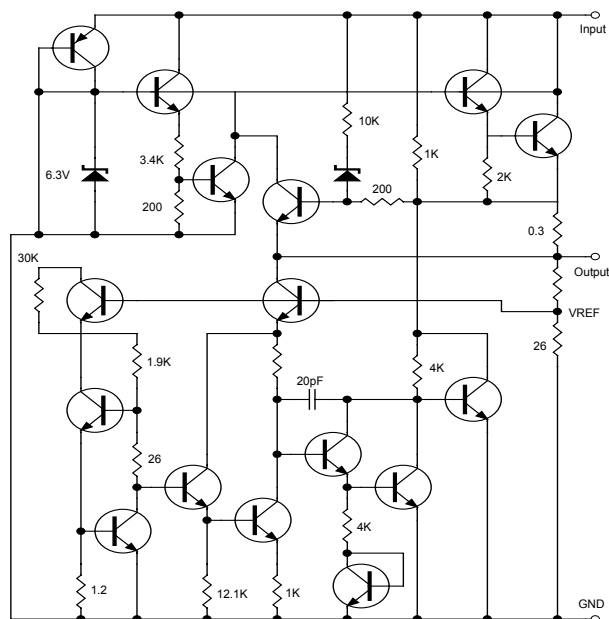
Symbol	Parameter	Maximum	Units
$I_O$	Output Current	1.5	A
$V_{IN}$	Input Voltage	35	V
$T_{OPR}$	Operating Junction Temperature Range	-40 ~ +150	°C
$T_{STG}$	Storage Temperature	-55 ~ +150	°C
$R_{\theta JA}$	Thermal Resistance, Junction to Air	65	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	5	°C/W

### Typical Application



**Note:**  
 C1 and C2 are required if regulator is located far from power supply filter and load, or oscillation may induced on the loop.

### Schematic Diagram





**Electrical Characteristics**

$V_{in}=10V$ ,  $I_o=500mA$ ,  $C_{in}=0.33\mu F$ ,  $C_{out}=0.1\mu F$ ,  $0^{\circ}C \leq T_j \leq 125^{\circ}C$  (unless otherwise noted)

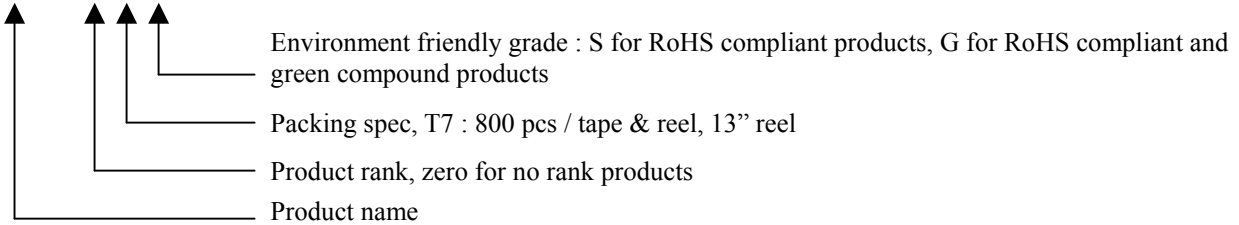
Symbol	Parameter	Conditions	LM7805F3 A-rank			Units
			Min	Typ	Max	
Vo	Output Voltage	Tj=25°C	4.85	5	5.15	V
		PD≤15W, 5mA≤Io≤1A	4.85	5	5.15	
ΔVo	Line Regulation	Tj=25°C, 7V≤Vin≤25V	-	3	50	mV
		Tj=25°C, 8V≤Vin≤12V	-	1	25	
ΔVo	Load Regulation	Tj=25°C, 5mA≤Io≤1.5A	-	-	100	mV
		Tj=25°C, 250mA≤Io≤750mA	-	-	50	
IQ	Quiescent Current	Tj=25°C	-	-	8	mA
ΔIQ	Quiescent Current Change	5mA≤Io≤1A	-	-	0.5	mA
		7V≤Vin≤25V	-	-	1.3	
Vn	Output Noise Voltage	Ta=25°C, 10Hz≤f≤100KHz	-	40	-	μV
RR	Ripple Rejection	8V≤Vin≤18V, f=120Hz	-	80	-	dB
VD	Dropout Voltage	Tj=25°C, Io=1A	-	2	-	V
Isc	Short Circuit Current	Tj=25°C	-	250	-	mA
Ipk	Peak Output Current	Tj=25°C	-	1.8	-	A
ΔVo / ΔT	Average Tc of Vout	0°C≤Tj≤+125°C, Io=5mA	-	-0.6	-	mV/°C

Symbol	Parameter	Conditions	LM7805F3 B-rank			Units
			Min	Typ	Max	
Vo	Output Voltage	Tj=25°C	4.75	5	5.25	V
		PD≤15W, 5mA≤Io≤1A	4.75	5	5.25	
ΔVo	Line Regulation	Tj=25°C, 7V≤Vin≤25V	-	3	50	mV
		Tj=25°C, 8V≤Vin≤12V	-	1	25	
ΔVo	Load Regulation	Tj=25°C, 5mA≤Io≤1.5A	-	-	100	mV
		Tj=25°C, 250mA≤Io≤750mA	-	-	50	
IQ	Quiescent Current	Tj=25°C	-	-	8	mA
ΔIQ	Quiescent Current Change	5mA≤Io≤1A	-	-	0.5	mA
		7V≤Vin≤25V	-	-	1.3	
Vn	Output Noise Voltage	Ta=25°C, 10Hz≤f≤100KHz	-	40	-	μV
RR	Ripple Rejection	8V≤Vin≤18V, f=120Hz	-	80	-	dB
VD	Dropout Voltage	Tj=25°C, Io=1A	-	2	-	V
Isc	Short Circuit Current	Tj=25°C	-	250	-	mA
Ipk	Peak Output Current	Tj=25°C	-	1.8	-	A
ΔVo / ΔT	Average Tc of Vout	0°C≤Tj≤+125°C, Io=5mA	-	-0.6	-	mV/°C

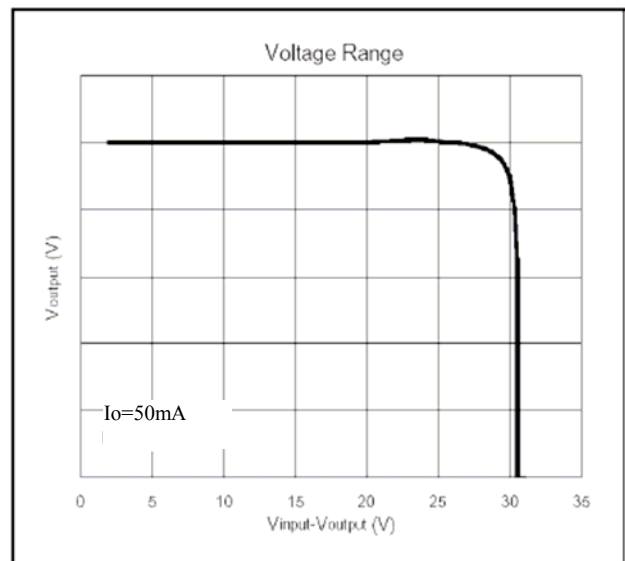
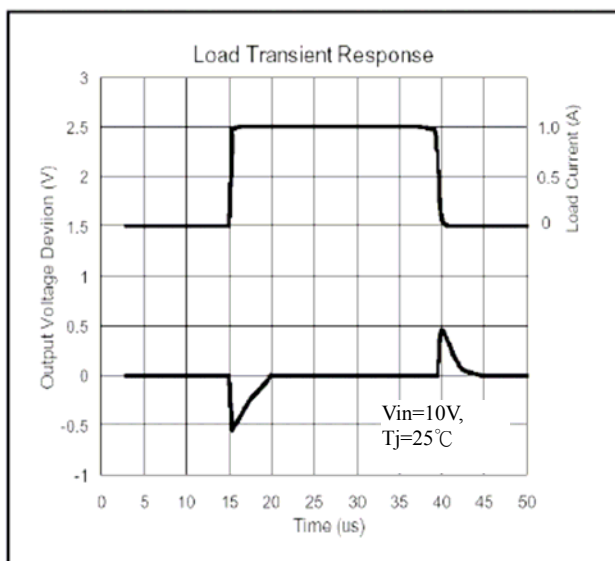
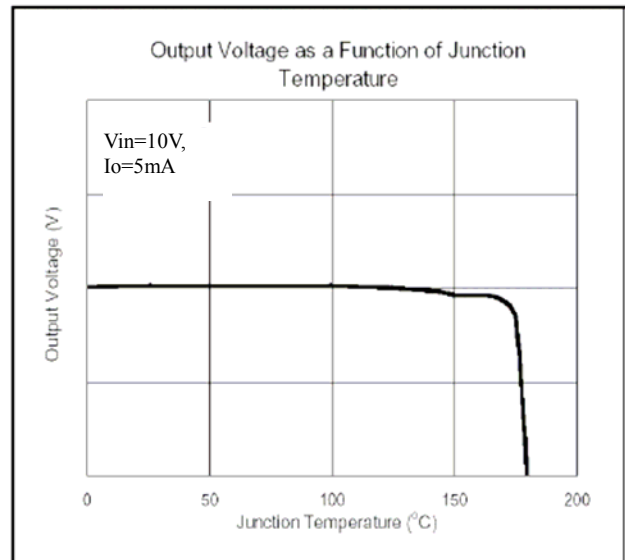
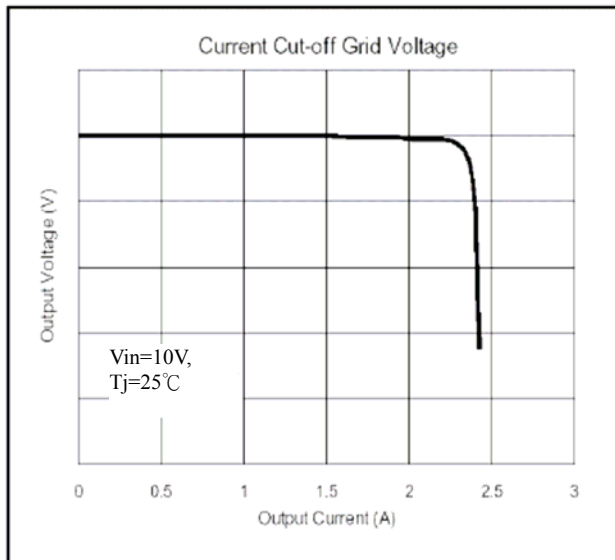


**Ordering Information**

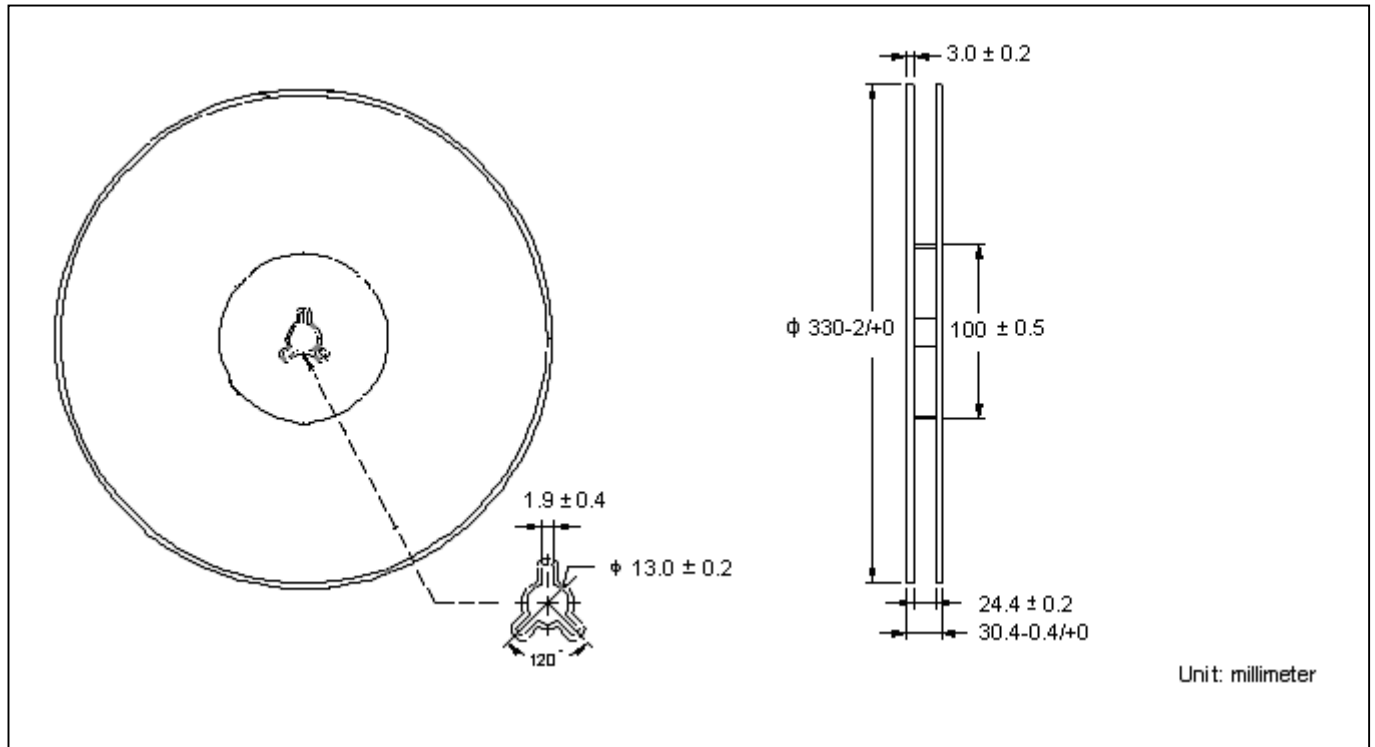
Device	Rank	Output Voltage Tolerance	Package	Shipping
LM7805F3-A-T4-S	A	3%	TO-263 (Pb-free lead plating package)	Tape & Reel / 800 pcs
LM7805F3-B-T4-S	B	5%	TO-263 (Pb-free lead plating package)	Tape & Reel / 800 pcs



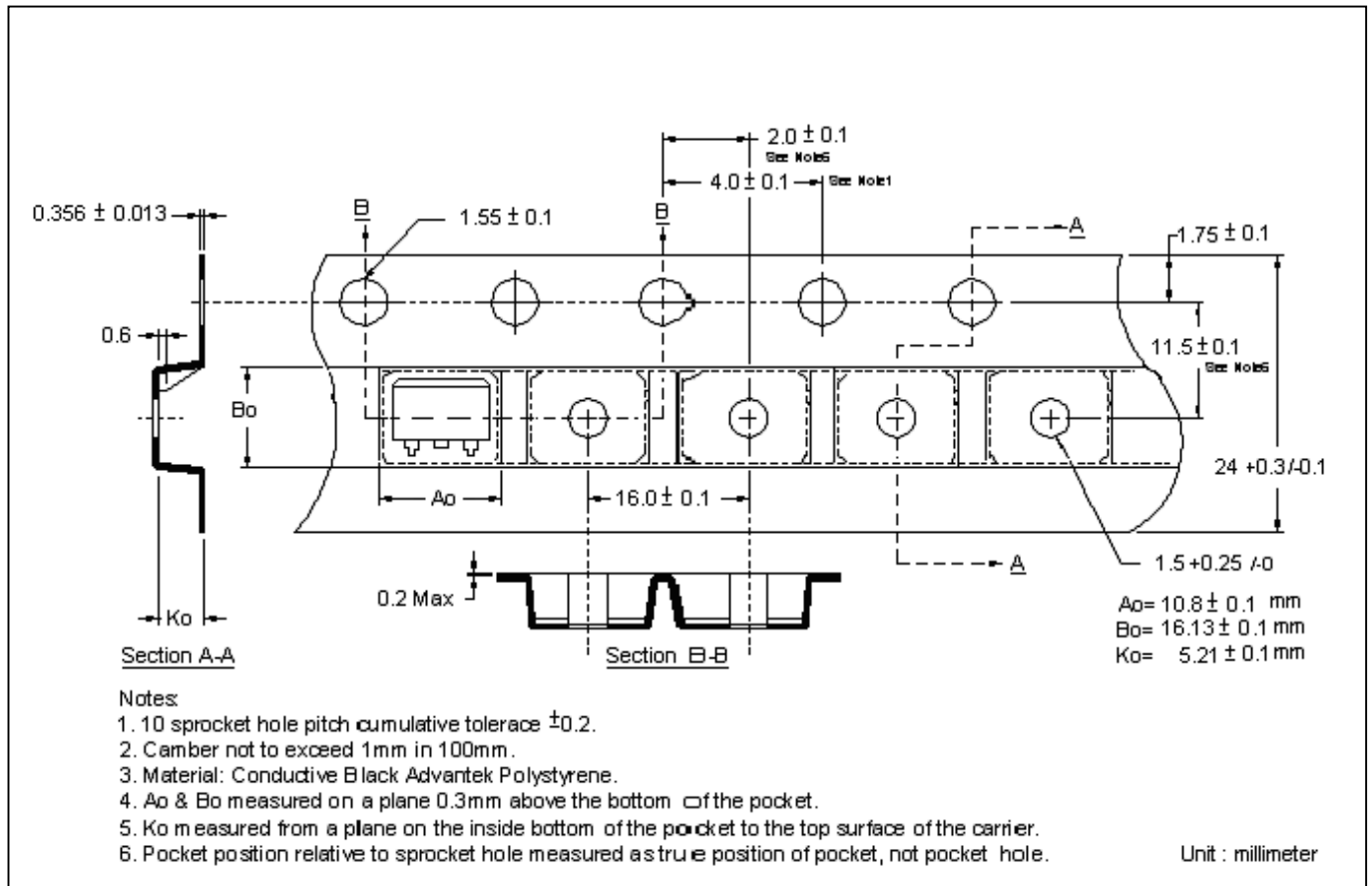
**Typical Characteristics**



**Reel Dimension**



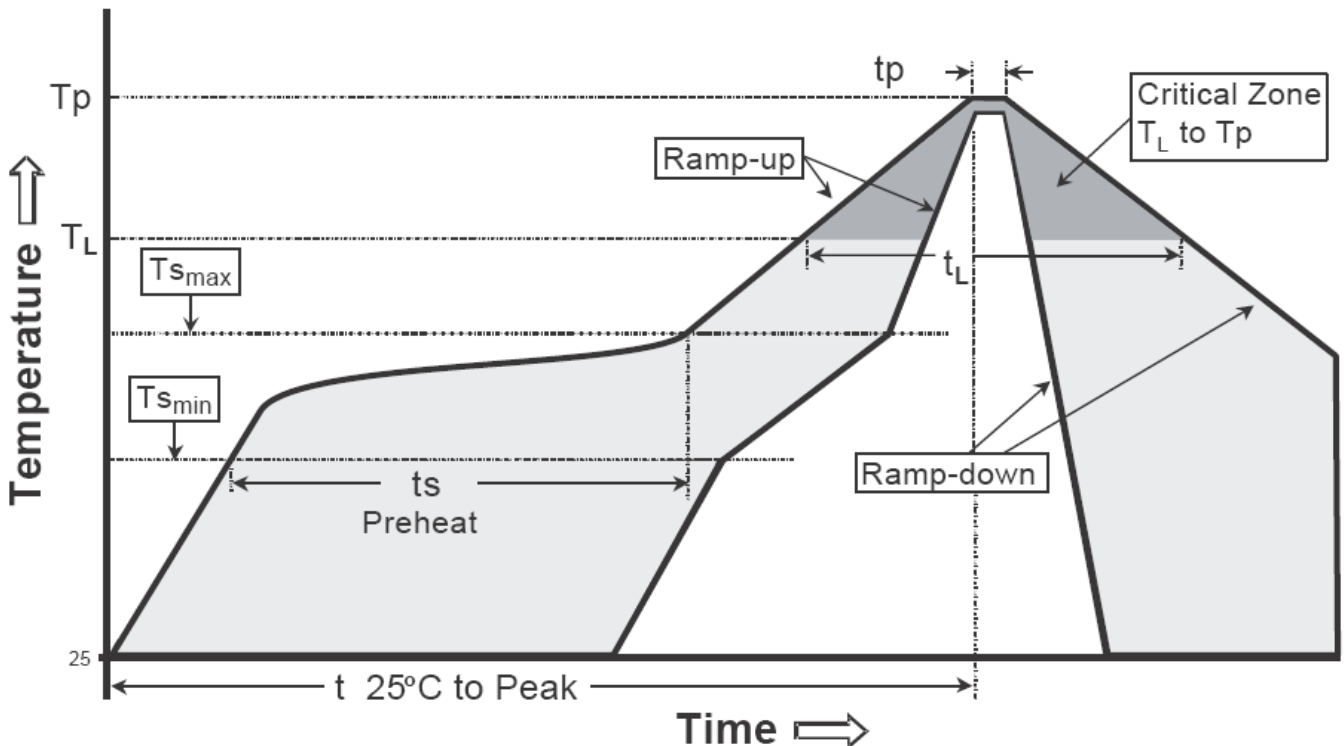
**Carrier Tape Dimension**



**Recommended wave soldering condition**

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

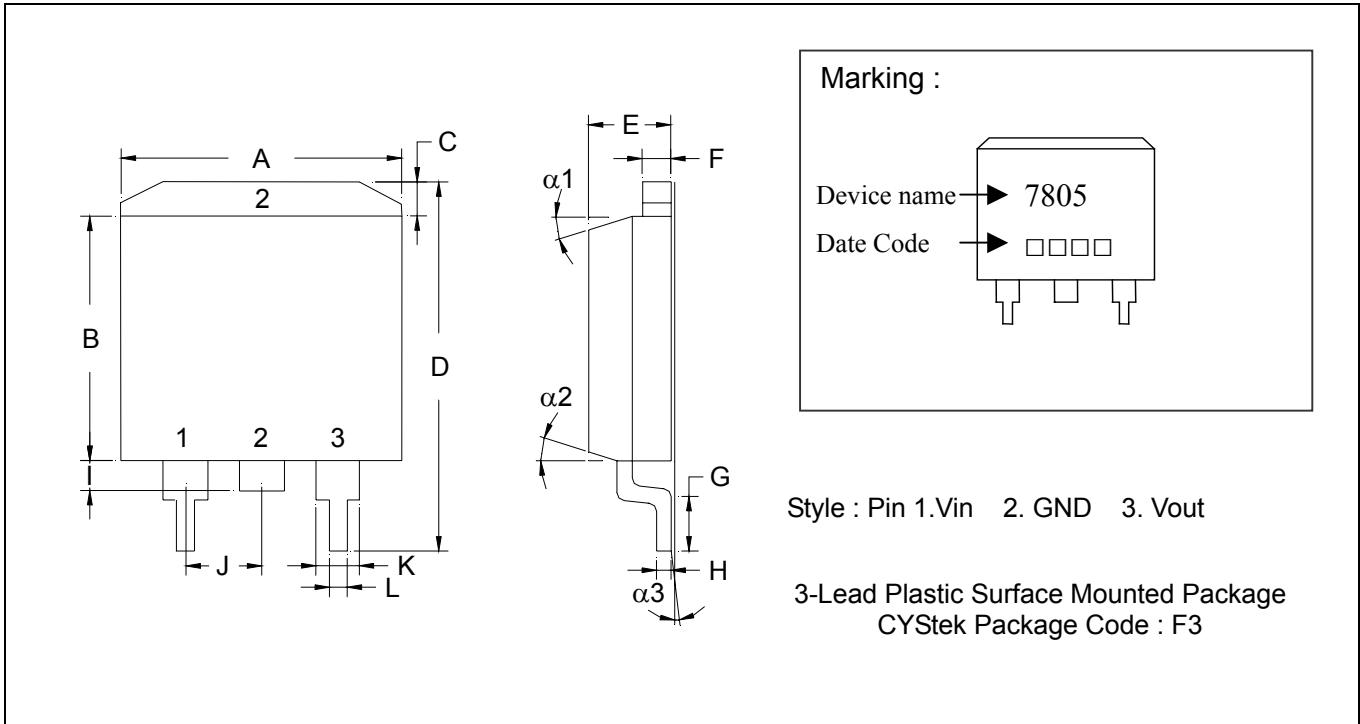
**Recommended temperature profile for IR reflow**



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (TL)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

**TO-263 Dimension**



\*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.3800	0.4050	9.65	10.29	I	0.0500	0.0700	1.27	1.78
B	0.3300	0.3700	8.38	9.40	J	-	*0.1000	-	*2.54
C	-	0.0550	-	1.40	K	0.0450	0.0550	1.14	1.40
D	0.5750	0.6250	14.61	15.88	L	0.0200	0.0390	0.51	0.99
E	0.1600	0.1900	4.06	4.83	$\alpha 1$	-	-	6°	8°
F	0.0450	0.0550	1.14	1.40	$\alpha 2$	-	-	6°	8°
G	0.0900	0.1100	2.29	2.79	$\alpha 3$	-	-	0°	5°
H	0.0180	0.0290	0.46	0.74					

Notes : 1. Controlling dimension : millimeters.  
 2. Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.  
 3. If there is any question with packing specification or packing method, please contact your local CYStek sales office.

**Material :**

- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0

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