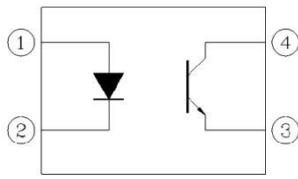


Schematic



PinConfiguration

1. Anode
2. Cathode
3. Emitter
4. Collector



Features:

- Compliance Halogens Free (Only copper leadframe)
(Br < 900 ppm, Cl < 900 ppm, Br+Cl < 1500 ppm)
- Current transfer ratio
(CTR: 50~600% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output
(Viso = 5000 V rms)
- Creepage distance > 7.62mm
- Operating temperature up to + 110°C
- Compact small outline package
- Compliance with EU REACH
- RoHS compliant version

Description:

The PC817 series of devices each consist of an infrared emitting diodes, optically coupled to a phototransistor detector.

They are packaged in a 4-pin DIP package and available in wide-lead spacing and SMD option.

Applications:

- System appliances, measuring instruments
- Programmable controllers
- Telecommunication equipments
- Home appliances, such as fan heaters, etc.
- Signal transmission between circuits of different potentials and impedances

Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I _F	60	mA
	Peak forward current (1us, pulse)	I _{FP}	1	A
	Reverse voltage	V _R	6	V
	Power dissipation Derating factor (above Ta = 100°C)	P _D	100	mW
			2.9	mW/°C
Output	Power dissipation Derating factor (above Ta = 100°C)	P _C	150	mW
			5.8	mW/°C
	Collector current	I _C	50	mA
	Collector-Emitter voltage	V _{CEO}	35	V
	Emitter-Collector voltage	V _{ECO}	6	V
Total Power Dissipation		P _{TOT}	200	mW
Isolation Voltage*1		V _{ISO}	5000	Vrms
Operating temperature		T _{OPR}	-55 ~ +110	°C
Storage temperature		T _{STG}	-55 ~ +125	°C
Soldering Temperature*2		T _{sol}	260	°C

Notes:

*1 .AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2 are shorted together, and pins 3, 4 are shorted together.

*2 .For 10 seconds

Electro-Optical Characteristics (Ta=25°C unless specified otherwise)

Input

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Forward voltage	V_F	-	1.2	1.4	V	$I_F = 20\text{mA}$
Reverse current	I_R	-	-	10	μA	$V_R = 4\text{V}$
Input capacitance	C_{in}	-	30	250	pF	$V = 0, f = 1\text{kHz}$

Output

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Collector-Emitter dark current	I_{CEO}	-	-	100	nA	$V_{CE} = 20\text{V}, I_F = 0\text{mA}$
Collector-Emitter breakdown voltage	BV_{CEO}	35	-	-	V	$I_C = 0.1\text{mA}$
Emitter-Collector breakdown voltage	BV_{ECO}	6	-	-	V	$I_E = 0.1\text{mA}$

Transfer Characteristics (Ta=25°C unless specified otherwise)

Parameter		Symbol	Min	Typ	Max	Unit	Condition
Current Transfer ratio	PC817	CTR	50	-	600	%	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$
	PC817A		80	-	160		
	PC817B		130	-	260		
	PC817C		200	-	400		
	PC817D		300	-	600		
	PC817X		100	-	200		
	PC817Y		150	-	300		
Collector-Emitter saturation voltage		$V_{CE(sat)}$	-	0.1	0.2	V	$I_F = 20\text{mA}, I_C = 1\text{mA}$
Isolation resistance		R_{IO}	5×10^{10}	-	-	Ω	$V_{IO} = 500\text{Vdc}, 40 \sim 60\% \text{ R.H.}$
Floating capacitance		C_{IO}	-	0.6	1.0	pF	$V_{IO} = 0, f = 1\text{MHz}$
Cut-off frequency		f_c	-	80	-	kHz	$V_{CE} = 5\text{V}, I_C = 2\text{mA}, R_L = 100\Omega, -3\text{dB}$
Rise time		t_r	-	-	18	μs	$V_{CE} = 2\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$
Fall time		t_f	-	-	18	μs	

* Typical values at Ta = 25°C

Typical Electro-Optical Characteristics Curves

Figure 1. Forward Current vs Forward Voltage

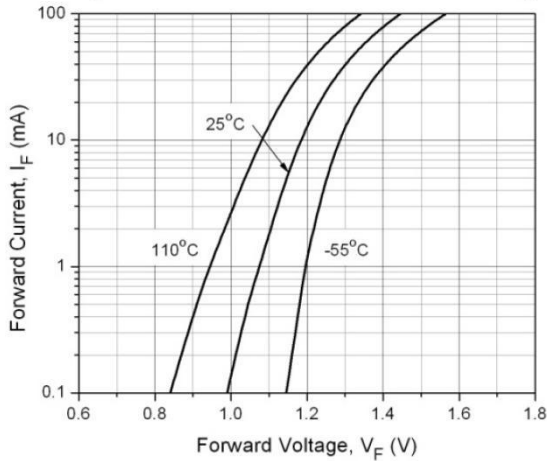


Figure 2. Normalized Current Transfer Ratio vs Forward Current

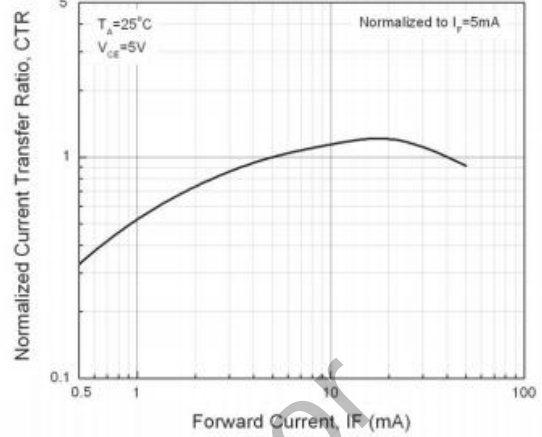


Figure 3. Current Transfer Ratio vs Ambient Temperature

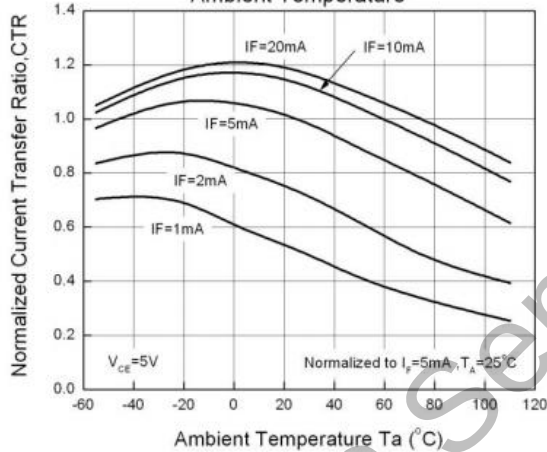


Figure 4. Dark Current vs Ambient Temperature

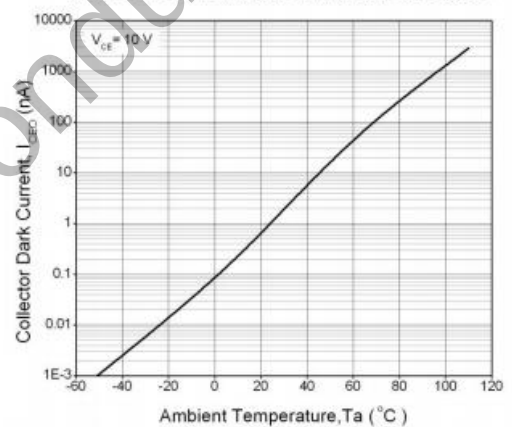


Figure 5. Collector-Emitter Saturation Voltage vs Collector Current

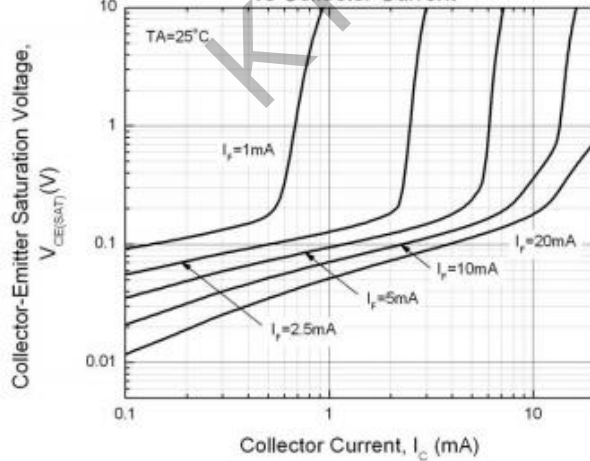
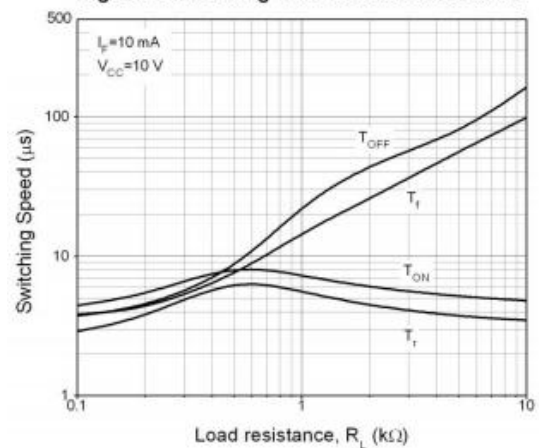


Figure 6. Switching Time vs Load Resistance



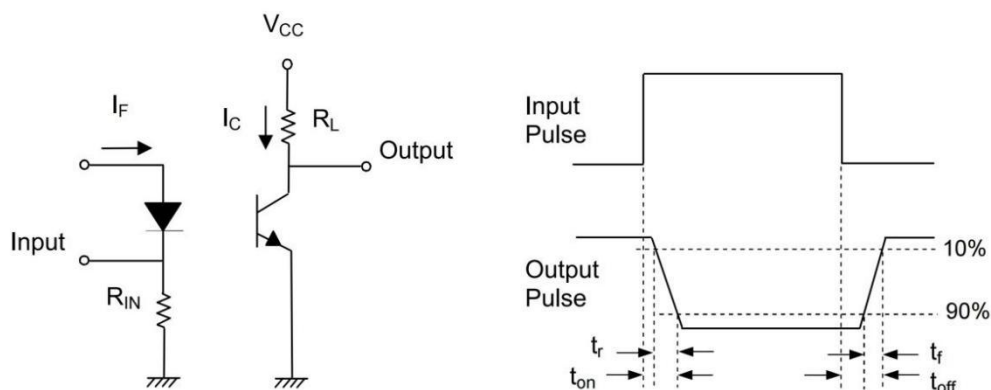


Figure 7. Switching Time Test Circuit & Waveforms

Order Information

Part Number

PC817-X-Y-Z-F-W

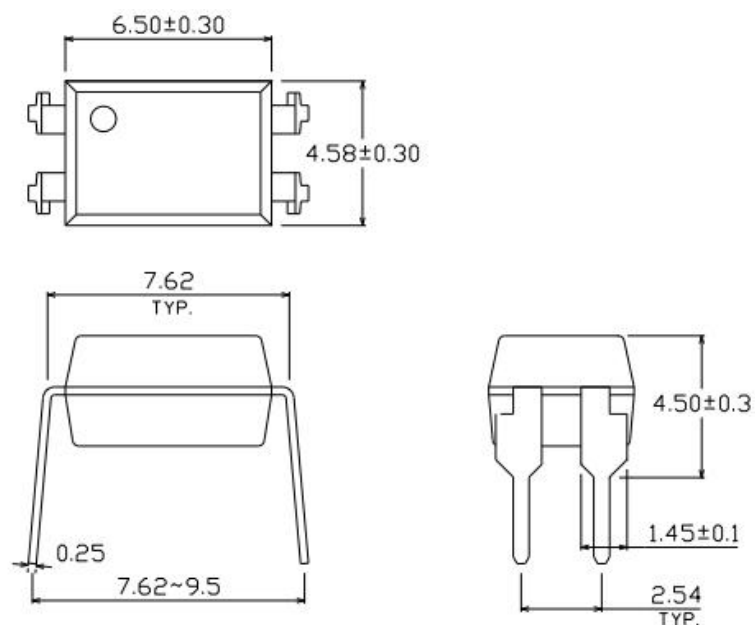
Note :

- X = Lead form option (S1, S2, M or none)
- Y = CTR Rank (A, B, C, D, X, Y or none)
- Z = Tape and reel option (TU, TD or none)
- F = Lead frame option (F: Iron, None: copper)
- W = Indicates internal identification code (with or none)

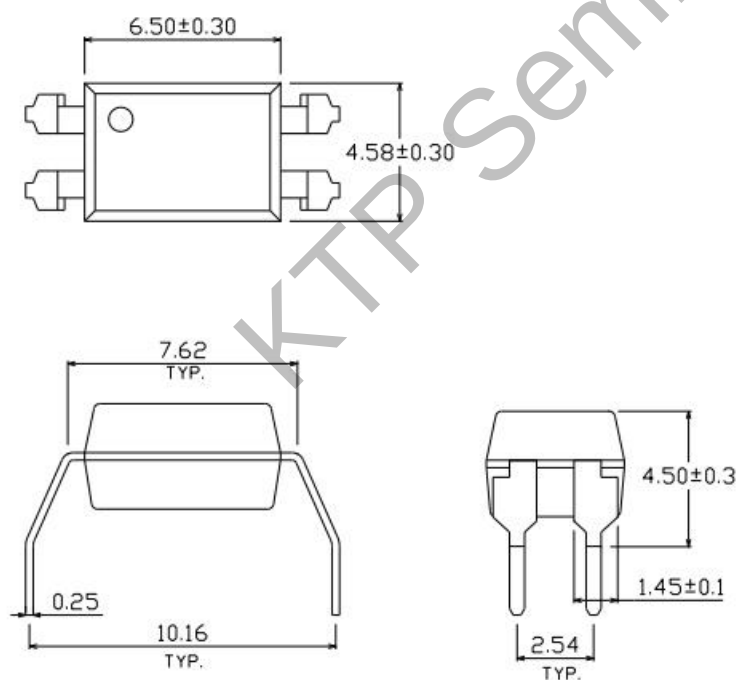
Option	Description
None	Standard DIP-4
M	Wide lead bend (0.4 inch spacing)
S1(TU)	Surface mount lead form (low profile) + TU tape & reel option
S1(TD)	Surface mount lead form (low profile) + TD tape & reel option
S2(TU)	Surface mount lead form (low profile) + TU tape & reel option
S2(TD)	Surface mount lead form (low profile) + TD tape & reel option

Package Dimension (Dimensions in mm)

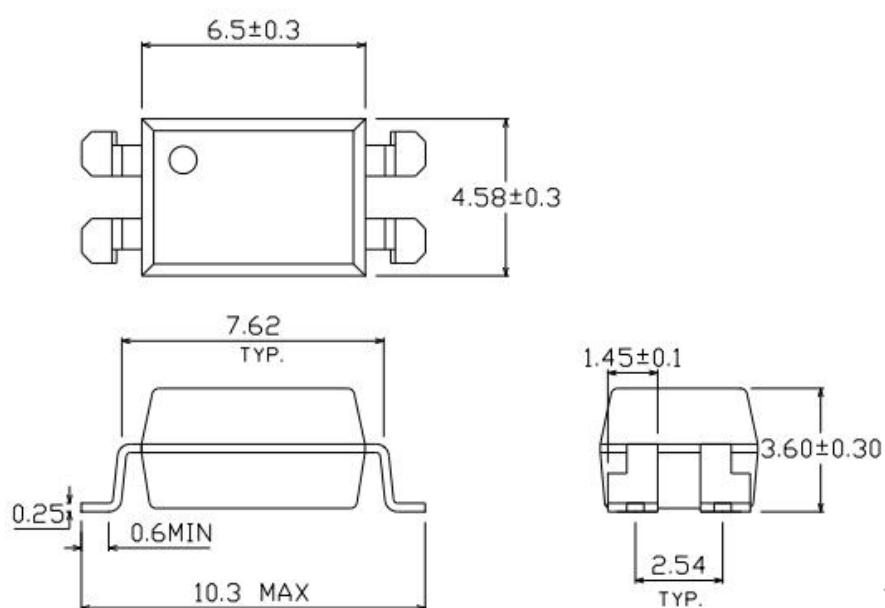
Standard DIP Type



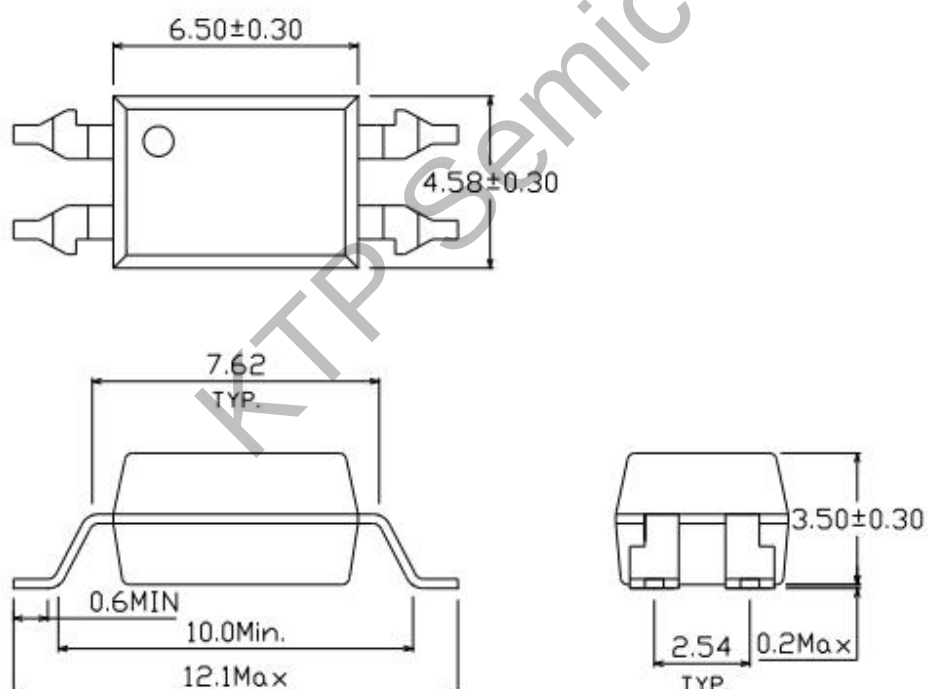
Option M Type



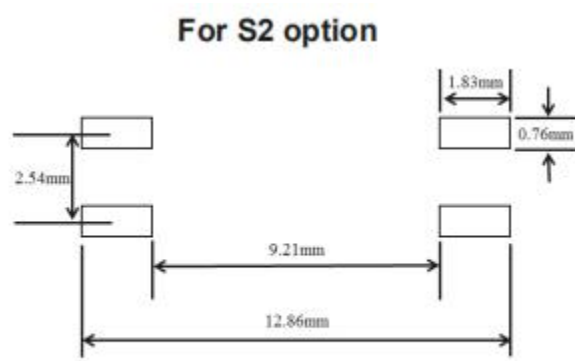
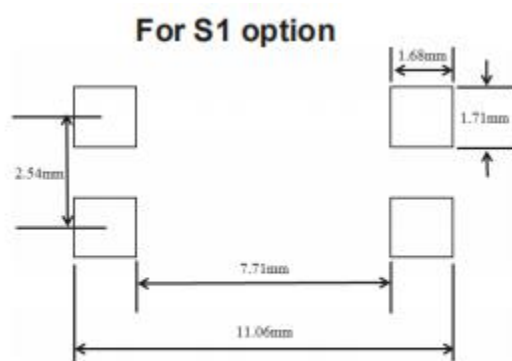
Option S1 Type



Option S2 Type



Recommended pad layout for surface mount leadform

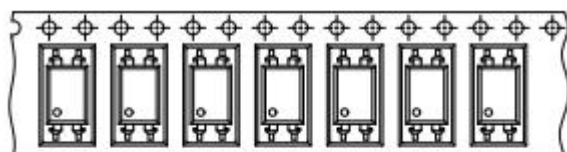


Notes:

Pad dimension is just for reference only.

Tape & Reel Packing Specifications

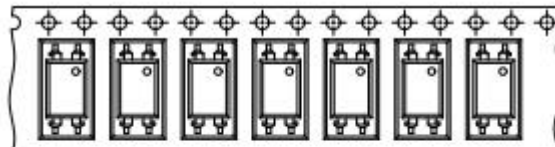
Option TD



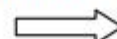
Direction of feed from reel



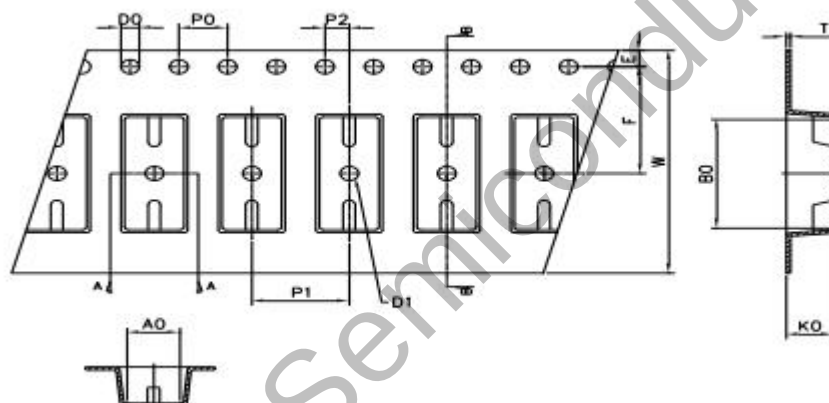
Option TU



Direction of feed from reel



Tape dimensions

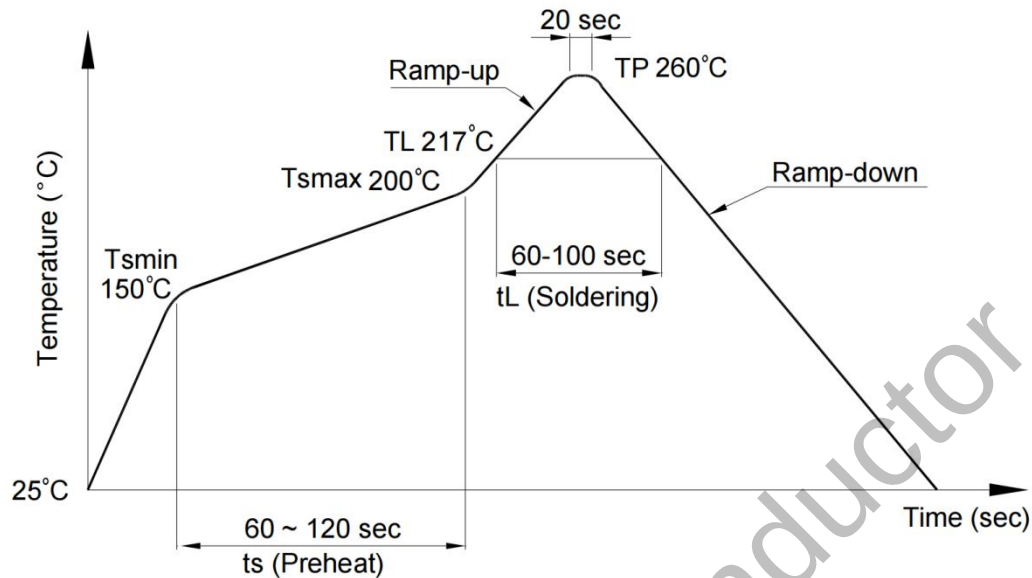


Dimension No.	Ao	Bo	Do	D1	E	F
Dimension (mm) S1	4.90±0.1	10.40±0.1	1.5±0.1	1.50±0.1	1.75±0.1	7.50±0.1
Dimension (mm) S2	4.88±0.1	12.55±0.1	1.5±0.1	1.50±0.1	1.75±0.1	11.5±0.1
Dimension No.	Po	P1	P2	t	W	Ko
Dimension (mm) S1	4.00±0.1	8.00±0.1	2.00±0.1	0.40±0.1	16.00±0.3	4.60±0.1
Dimension (mm) S2	4.00±0.1	8.00±0.1	2.00±0.1	0.40±0.1	24.00±0.3	4.00±0.1

Precautions for Use

1. Soldering Condition

1.1 (A) Maximum Body Case Temperature Profile for evaluation of Reflow Profile



Note:

Reference: IPC/JEDEC J-STD-020D

Preheat:

Temperature min (T _{smin})	150 °C
Temperature max (T _{smax})	200°C
Time (T _{smin} to T _{smax}) (ts)	60-120 seconds
Average ramp-up rate (T _{smax} to T _p)	3 °C/second max

Other:

Liquidus Temperature (TL)	217 °C
Time above Liquidus Temperature (t L)	60-100 sec
Peak Temperature (Tp)	260°C
Time within 5 °C of Actual Peak Temperature: T _p - 5°C	30 s
Ramp- Down Rate from Peak Temperature	6°C /second max.
Time 25°C to peak temperature	8 minutes max.
Reflow times	3 times