

FEATURES

- **LOW ON-STATE RESISTANCE:**
Ron = 0.9 Ω TYP
- **LARGE CONTINUOUS LOAD CURRENT:**
IL = 500 mA
- **HIGH-SPEED SWITCHING TIME:**
ton, toff = 0.5 ms MAX
- **1 CHANNEL TYPE**
1 a output
- **DESIGNED FOR AC/DC SWITCHING LINE CHANGER**
- **SMALL AND THIN PACKAGE:**
4-pin SOP, Height = 2.1 mm
- **HIGH ISOLATION VOLTAGE:**
BV = 1 500 Vr.m.s.
- **LOW OFFSET VOLTAGE**
- **AVAILABLE IN TAPE AND REEL:**
PS7205B-1A-E3, E4, F3, F4

DESCRIPTION

The PS7205B-1A is a low on-state resistance solid state relay containing a GaAs LED on the input side and MOS FETs on the output side. It is suitable for PLC, etc. because of its large continuous load current and low on-state resistance.

APPLICATIONS

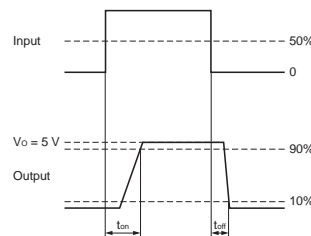
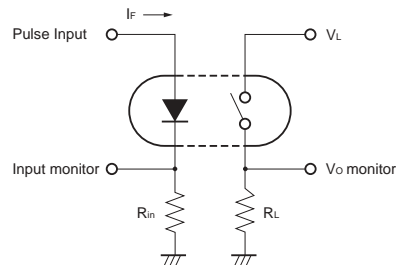
- MEASUREMENT EQUIPMENT
- FA EQUIPMENT

ELECTRICAL CHARACTERISTICS (TA = 25 °C)

PART NUMBER				PS7205B-1A			
SYMBOLS		PARAMETERS		UNITS	MIN	TYP	MAX
Diode	VF	Forward Voltage	IF = 5 mA	V		1.1	1.4
	IR	Reverse Current	VR = 5 V	μ A			5.0
MOSFET	Iloff	Off-state Leakage Current	VD = 80 V	nA		0.15	5.0
	Cout	Output Capacitance	VD = 0 V, f = 1 MHz	pF		30	
Coupled	IFon	LED On-state Current	IL = 500 mA	mA			2.0
	Ron	On-state Resistance	IF = 5 mA, IL = 500 mA, t \leq 10 ms	Ω		0.9	1.2
	ton	Turn-on Time ^{1,2}	IF = 5 mA, VO = 5 V, RL = 500 Ω , PW \geq 10 ms	ms		0.18	0.5
	toff	Turn-off Time ^{1,2}				0.04	0.5
	RI-O	Isolation Resistance	VI-O = 1.0 kVDC	Ω	10 ⁹		
CI-O	Isolation Capacitance	V = 0 V, f = 1 MHz	pF		0.5		

Notes:

1. Test Circuit for Switching Time:



2. The turn-on time and turn-off time are specified as input-pulse width \geq 10 ms.

Be aware that when the device operates with an input-pulse width of under 10 ms, the turn-on time and turn-off time will increase.

PS7205B-1A

ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
Diode			
I _F	Forward Current (DC)	mA	50
V _R	Reverse Voltage	V	5.0
P _D	Power Dissipation	mW	50
I _{FP}	Peak Forward Current ²	A	1
MOS FET			
V _L	Break Down Voltage	V	80
I _L	Continuous Load Current	mA	500
I _{LP}	Pulse Load Current (AC/DC Connection)	A	1
P _D	Power Dissipation	mW	300
Coupled			
BV	Isolation Voltage ⁴	Vr.m.s.	1 500
P _T	Total Power Dissipation	mW	350
T _A	Operating Ambient Temperature	°C	-40 to +85
T _{stg}	Storage Temperature	°C	-40 to +100

Notes:

- Operation in excess of any one of these parameters may result in permanent damage.
- PW = 100 μs, Duty Cycle = 1%.
- PW = 100 ms, 1 shot.
- AC voltage for 1 minute at T_A = 25°C, RH = 60% between input and output.

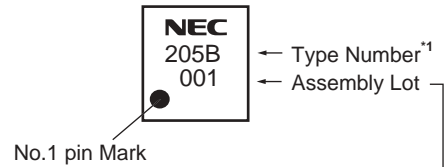
RECOMMENDED OPERATING CONDITIONS (T_A = 25°C)

SYMBOLS	PARAMETER	UNITS	MIN	TYP	MAX
I _F	LED Operating Current	mA	2	5	20
V _F	LED Off Voltage	V	0		0.5

ORDERING INFORMATION

PART NUMBER	PACKAGE	PACKING STYLE
PS7205B-1A	4-pin SOP	Magazine case 100 pcs
PS7205B-1A-E3		Embossed Tape 900 pcs/reel
PS7205B-1A-E4		
PS7205B-1A-F3		Embossed Tape 3 500 pcs/reel
PS7205B-1A-F4		

MARKING



*1 Applicable type numbers are underlined below

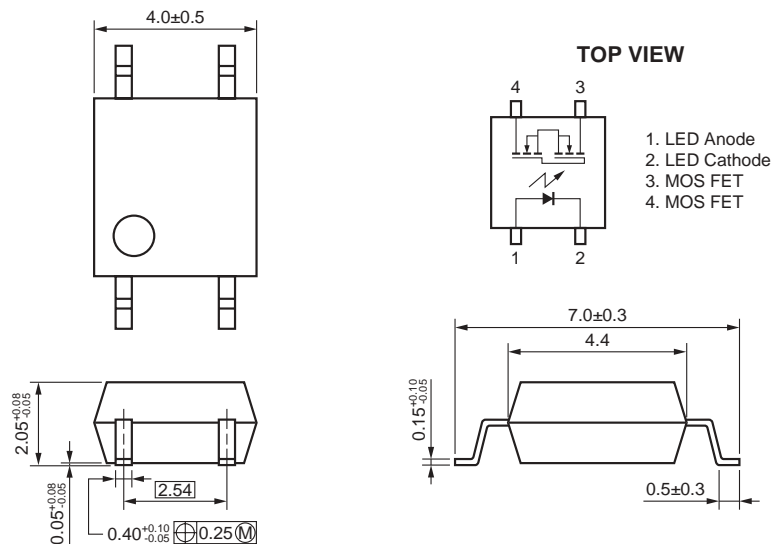
PS7205B-1A

001
 |
 | Week Assembled
 | Year Assembled
 | (Last 1 Digit)

Rank Code

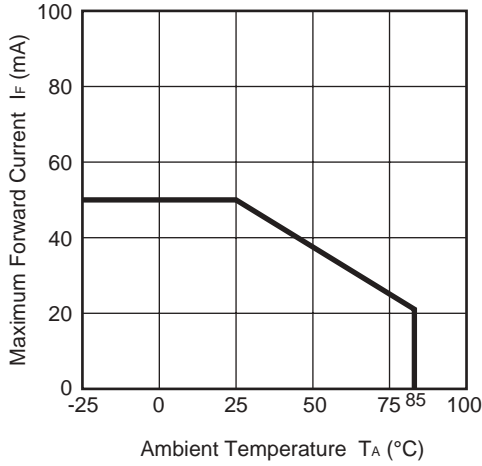
Nothing	Ink marking
N	Laser marking

OUTLINE DIMENSIONS (Units in mm)

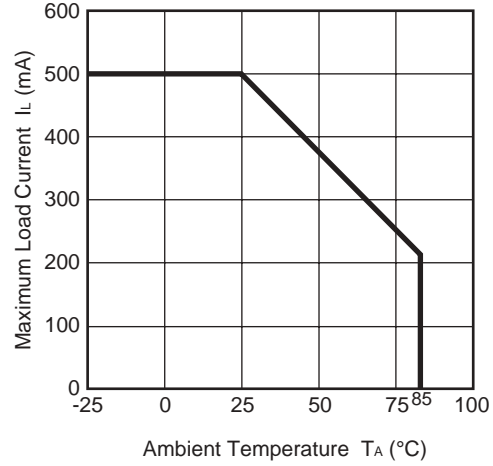


TYPICAL PERFORMANCE CURVES ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified)

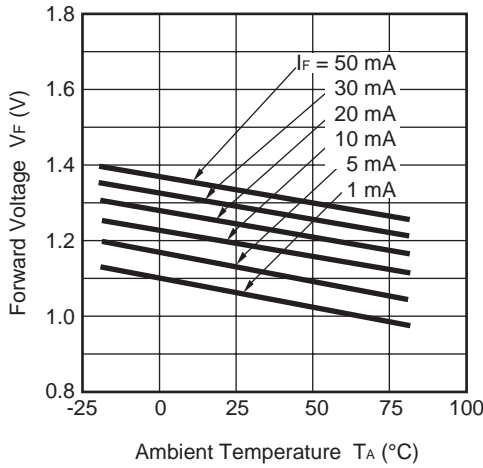
MAXIMUM FORWARD CURRENT vs AMBIENT TEMPERATURE



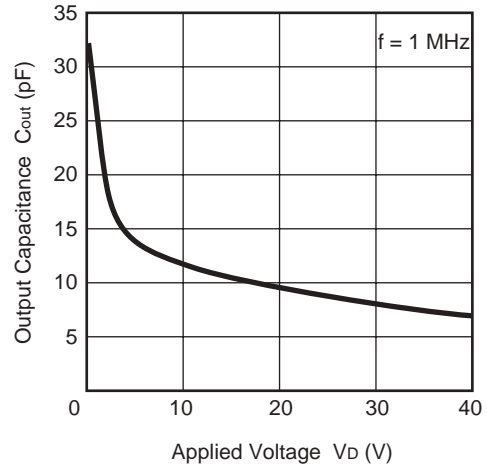
MAXIMUM LOAD CURRENT vs AMBIENT TEMPERATURE



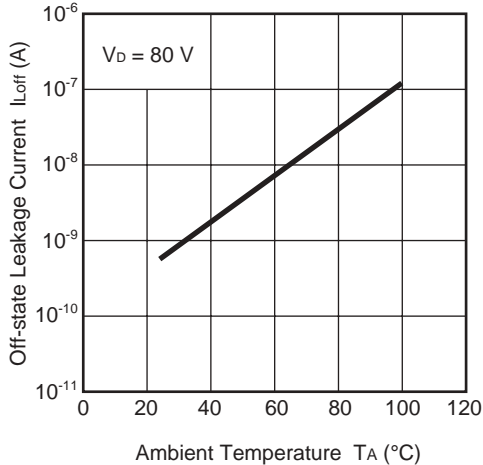
FORWARD VOLTAGE vs. AMBIENT TEMPERATURE



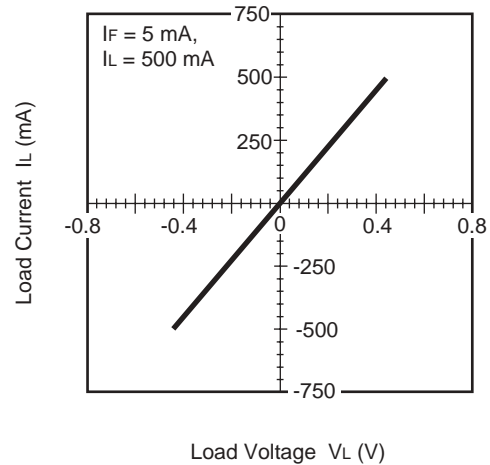
OUTPUT CAPACITANCE vs. APPLIED VOLTAGE



OFF-STATE LEAKAGE CURRENT vs. AMBIENT TEMPERATURE

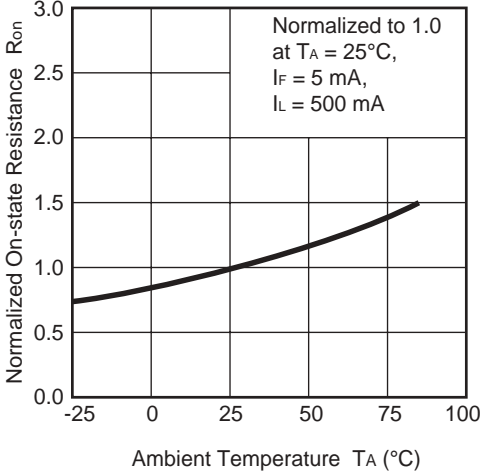


LOAD CURRENT vs. LOAD VOLTAGE

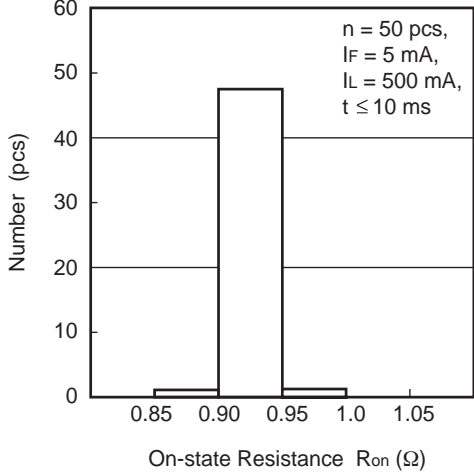


TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$, unless otherwise specified)

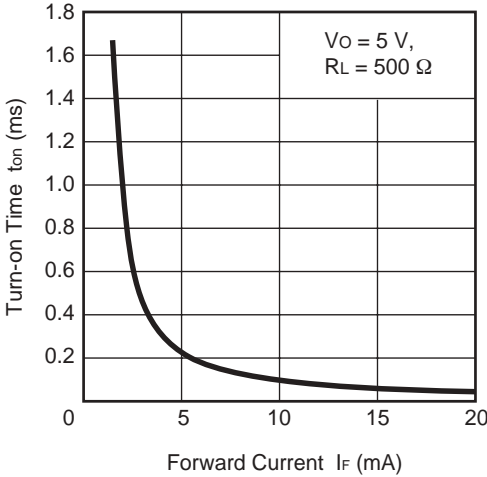
NORMALIZED ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE



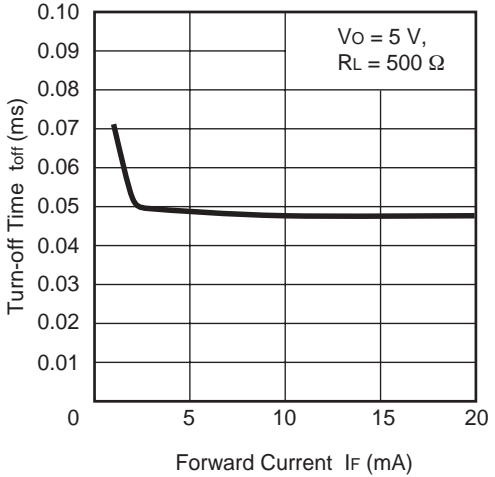
ON-STATE RESISTANCE DISTRIBUTION



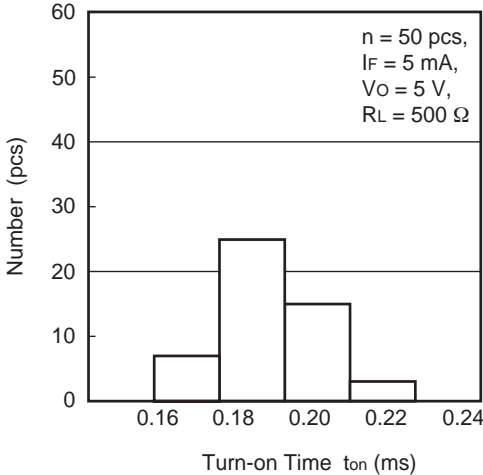
TURN-ON TIME vs. FORWARD CURRENT



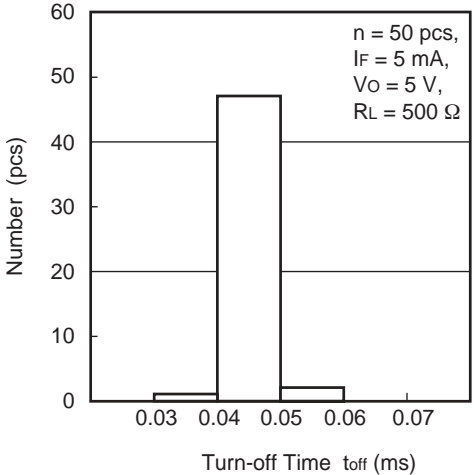
TURN-OFF TIME vs. FORWARD CURRENT



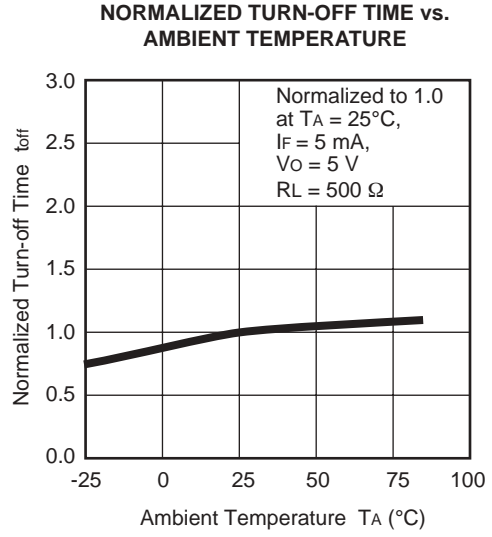
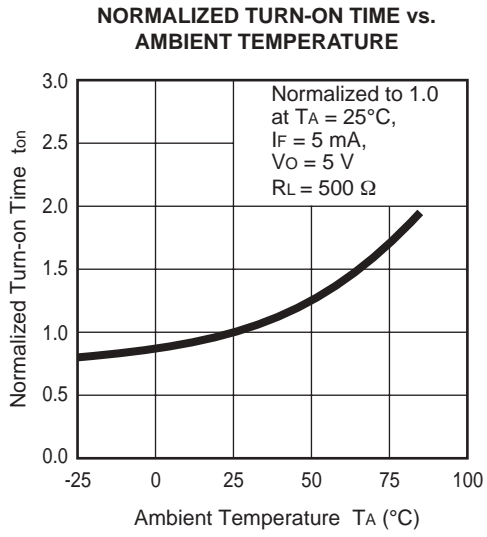
TURN-ON TIME DISTRIBUTION



TURN-OFF TIME DISTRIBUTION

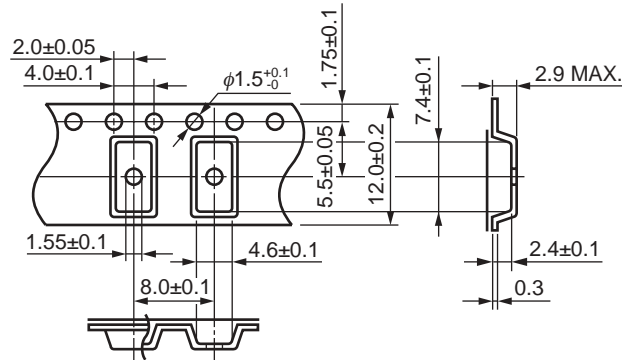


TYPICAL PERFORMANCE CURVES ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified)

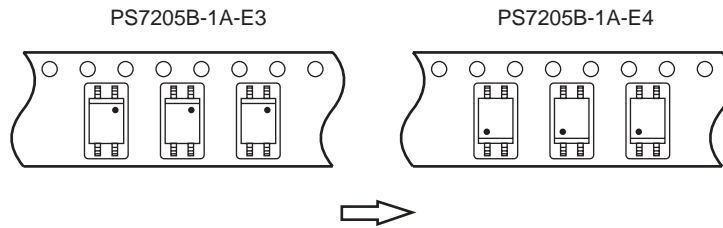


TAPING SPECIFICATIONS (Units in mm)

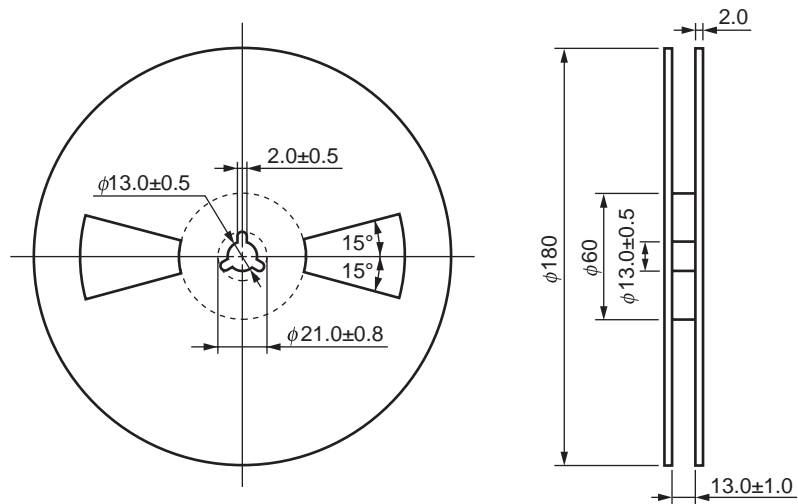
Tape Outline and Dimensions



Tape Direction



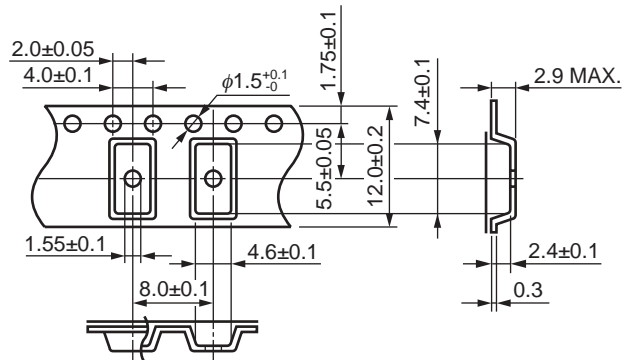
Reel Outline and Dimensions



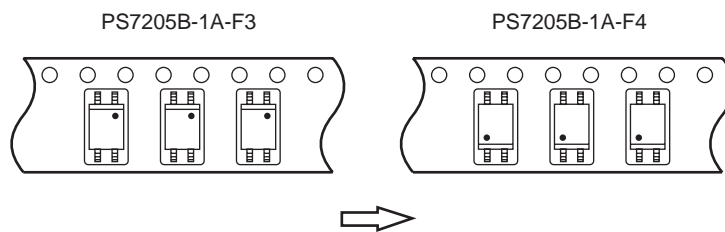
Packing: 900 pcs/reel

TAPING SPECIFICATIONS (Units in mm)

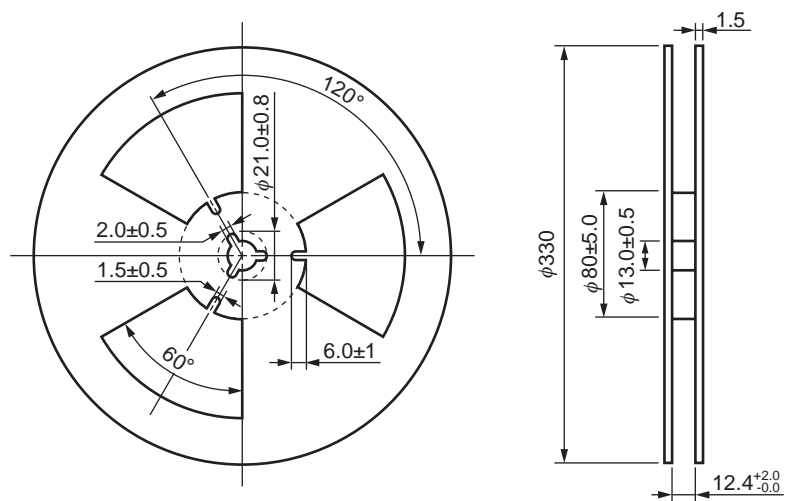
Tap Outline and Dimensions



Tap Direction



Reel Outline and Dimensions



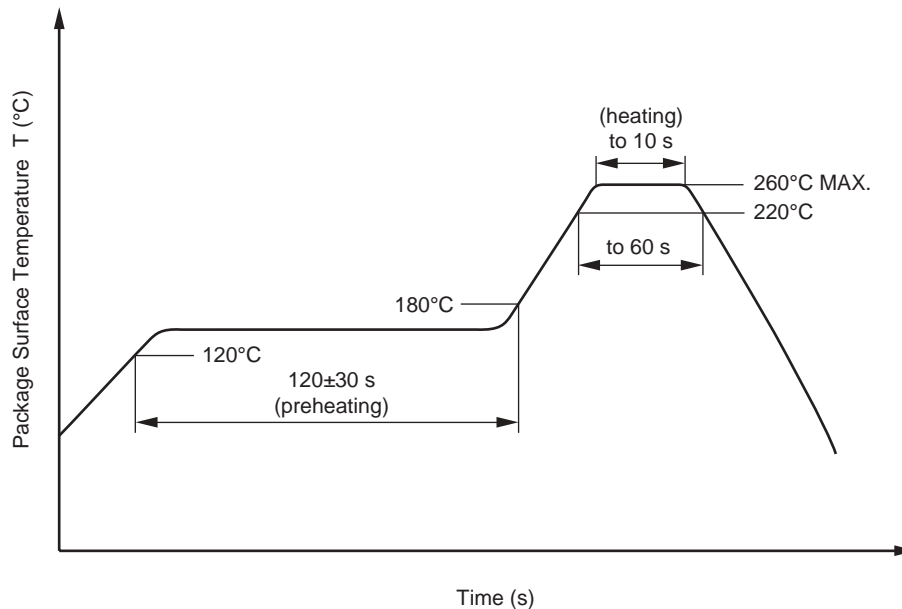
Packing: 3 500 pcs/reel

RECOMMENDED SOLDERING CONDITIONS

(1) Infrared reflow soldering

- Peak reflow temperature 260 °C or below (package surface temperature)
- Time of peak reflow temperature 10 seconds or less
- Time of temperature higher than 220 °C 60 seconds or less
- Time to preheat temperature from 120 to 180°C 120±30 s
- Number of reflows Three
- Flux Rosin flux containing small amount of chlorine
(The flux with a maximum chlorine content of 0.2 Wt % is recommended.)

Recommended Temperature Profile of Infrared Reflow



(2) Wave soldering

- Temperature 260 °C or below (molten solder temperature)
- Time 10 seconds or less
- Preheating conditions 120°C or below (package surface temperature)
- Number of times One (Allowed to be dipped in solder including plastic mold portion.)
- Flux Rosin flux containing small amount of chlorine
(The flux with a maximum chlorine content of 0.2 Wt % is recommended.)

(3) Cautions

- Fluxes
Avoid removing the residual flux with freon-based cleaning solvent.

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