DATA SHEET

Solid State Relay
OCMOS FET

PS7341C-1A,PS7341CL-1A

CURRENT LIMIT TYPE
6-PIN DIP, HIGH ISOLATION VOLTAGE
1-ch Optical Coupled MOS FET

DESCRIPTION

The PS7341C-1A and PS7341CL-1A are solid state relays containing GaAs LEDs on the light emitting side (input side) and MOS FETs including current control circuit on the output side. Current control circuit of OCMOS FET protects this device from thermal breakdown and output circuit.

They are suitable for analog signal control because of their low offset and high linearity.

The PS7341CL-1A has a surface mount type lead.

FEATURES

- Limit current (I_{LMT} = 125 to 250 mA)
- High isolation voltage (BV = 3 750 Vr.m.s.)
- 1 channel type (1 a output)
- Low LED operating current (I_F = 2 mA)
- Designed for AC/DC switching line changer
- Small package (6-pin DIP)
- Low offset voltage
- PS7341CL-1A: Surface mount type
- UL approved: File No. E72422 (S)
- BSI approved: No. 8252/8253
- CSA approved: No. CA 101391

APPLICATIONS

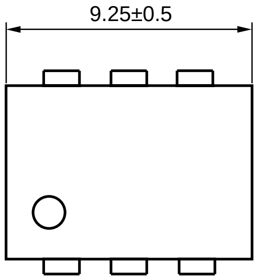
- Exchange equipment
- Measurement equipment
- FA/OA equipment

Document No. PN10308EJ01V1DS (1st edition)
(Previous No. P12934EJ5V0DS00)
Date Published February 2003 CP(K)
Printed in Japan

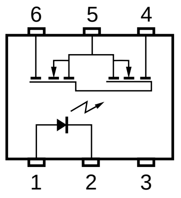
The mark ★ shows major revised points.

PACKAGE DIMENSIONS (in millimeters)

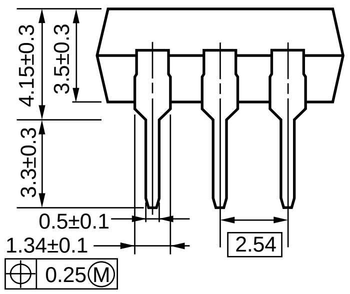
PS7341C-1A

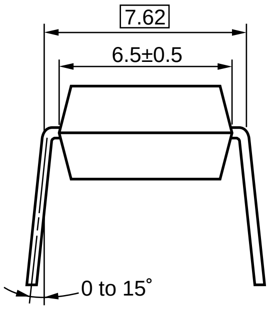


TOP VIEW

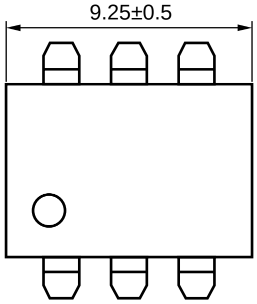


1. LED Anode
2. LED Cathode
3. NC
4. MOS FET Drain
5. MOS FET Source
6. MOS FET Drain





PS7341CL-1A



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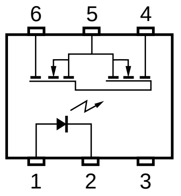

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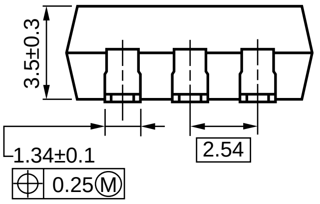
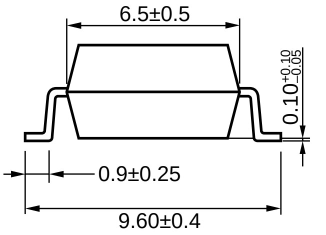




ORDERING INFORMATION

Part Number	Package	Packing Style	Application Part Number[*1]
PS7341C-1A	6-pin DIP	Magazine case 50 pcs	PS7341C-1A
PS7341CL-1A			PS7341CL-1A
PS7341CL-1A-E3		Embossed Tape 1 000 pcs/reel	
PS7341CL-1A-E4			

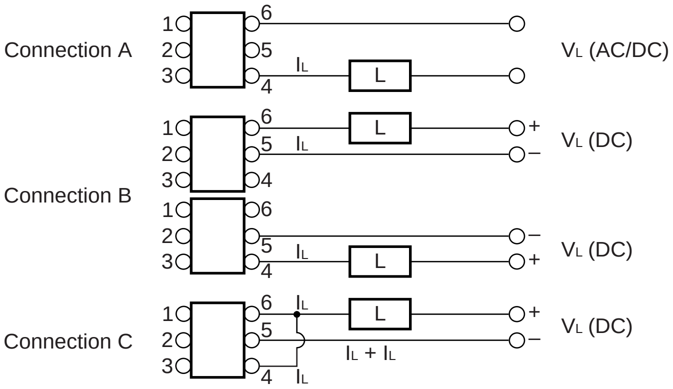
***1** For the application of the Safety Standard, following part number should be used.

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise specified)

Parameter			Symbol	Ratings	Unit
Diode	Forward Current (DC)		I_F	50	mA
	Reverse Voltage		V_R	5.0	V
	Power Dissipation		P_D	50	mW
	Peak Forward Current*1		I_{FP}	1	A
MOS FET	Break Down Voltage		V_L	400	V
	Continuous Load Current*2	Connection A	I_L	120	mA
		Connection B		120	
		Connection C		240	
	Pulse Load Current*3 (AC/DC Connection)		I_{LP}	120	mA
	Power Dissipation		P_D	560	mW
Isolation Voltage*4			BV	3 750	Vr.m.s.
Total Power Dissipation			P_T	610	mW
Operating Ambient Temperature			T_A	–40 to +85	°C
Storage Temperature			T_{stg}	–40 to +125	°C

*1 PW = 100 μs, Duty Cycle = 1 %

*2 Conditions: $I_F \geq 2$ mA. The following types of load connections are available.



*3 PW = 100 ms, 1 shot

*4 AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output

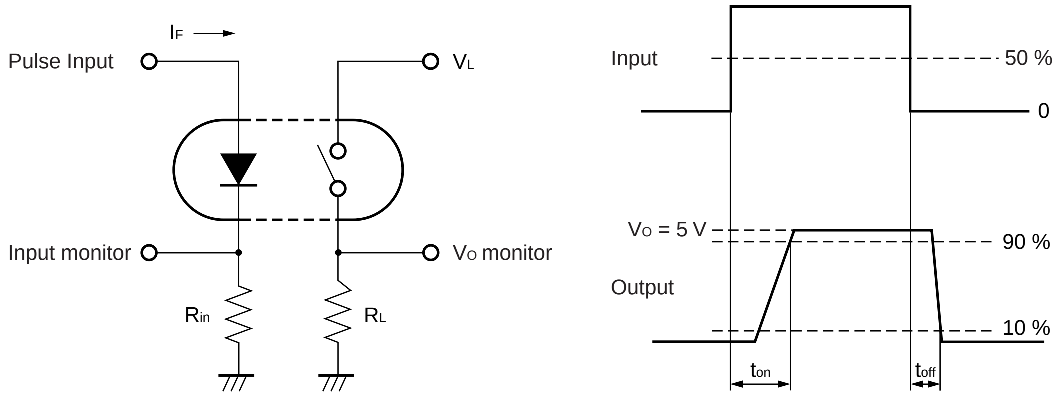
RECOMMENDED OPERATING CONDITIONS (T_A = 25 °C)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
LED Operating Current	I_F	2	10	20	mA
LED Off Voltage	V_F	0		0.5	V

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V_F	I_F = 10 mA		1.2	1.4	V
	Reverse Current	I_R	V_R = 5 V			5.0	μA
MOS FET	Off-state Leakage Current	I_{Loff}	V_D = 400 V		0.001	1.0	μA
	Output Capacitance	C_{out}	V_D = 0 V, f = 1 MHz		63		pF
Coupled	LED On-state Current	I_{Fon}	I_L = 120 mA			2.0	mA
	On-state Resistance	R_{on1}	I_F = 10 mA, I_L = 10 mA		27	35	Ω
		R_{on2}	I_F = 10 mA, I_L = 120 mA, t ≤ 10 ms		22	30	
	★ Turn-on Time[*1]	t_{on}	I_F = 10 mA, V_O = 5 V, R_L = 2 kΩ, PW ≥ 10 ms		0.55	1.0	ms
	Turn-off Time[*1]	t_{off}			0.07	1.0	
	Isolation Resistance	R_{I-O}	V_{I-O} = 1.0 kV_{DC}	10^9			Ω
	Isolation Capacitance	C_{I-O}	V = 0 V, f = 1 MHz		1.1		pF
	Limit Current[*2]	I_{LMT}	I_F = 10 mA, t = 5 ms, V_L = 6 V	125	200	250	mA

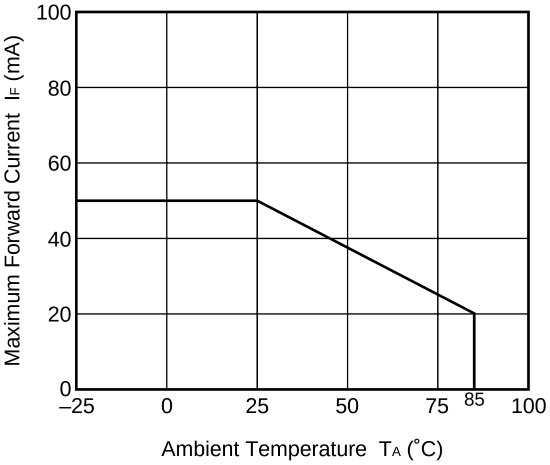
***1** Test Circuit for Switching Time



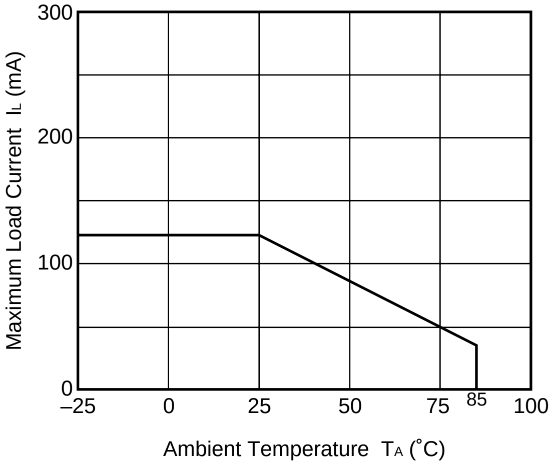
***2** N rank : 125 to 250 mA
M rank : 125 to 180 mA
L rank : 170 to 250 mA

★ TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise specified)

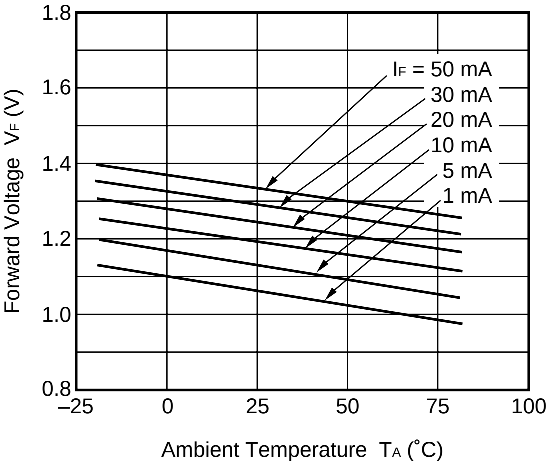
MAXIMUM FORWARD CURRENT vs.
AMBIENT TEMPERTURE



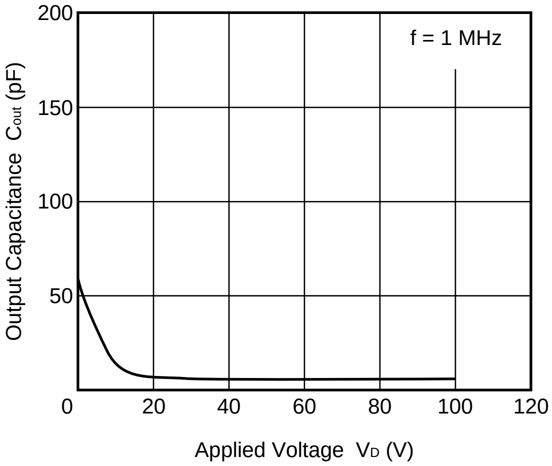
MAXIMUM LOAD CURRENT vs.
AMBIENT TEMPERTURE



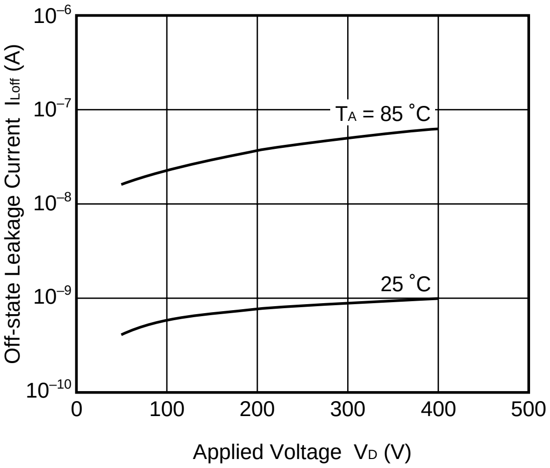
FORWARD VOLTAGE vs.
AMBIENT TEMPERTURE



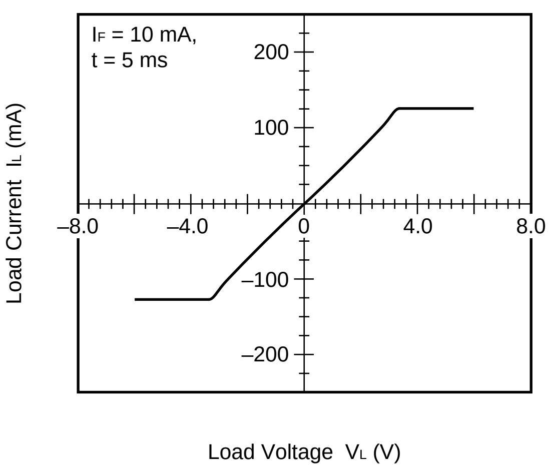
OUTPUT CAPACITANCE vs.
APPLIED VOLTAGE



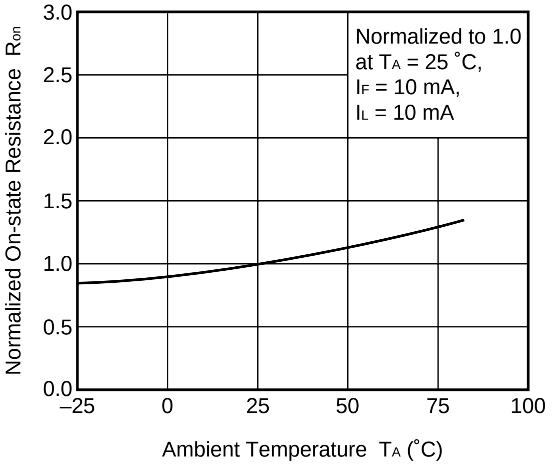
OFF-STATE LEAKAGE CURRENT vs.
APPLIED VOLTAGE



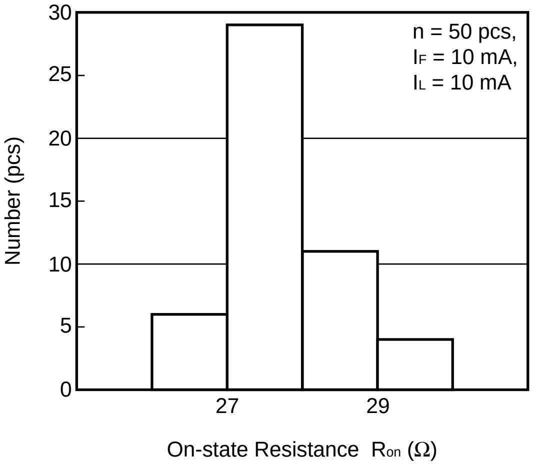
LOAD CURRENT vs. LOAD VOLTAGE



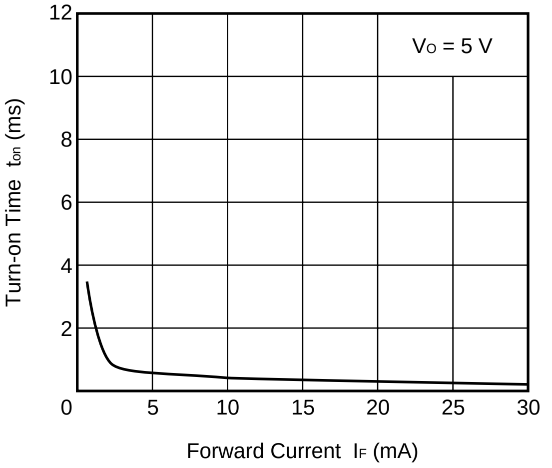
NORMALIZED ON-STATE RESISTANCE vs. AMBIENT TEMPERTURE



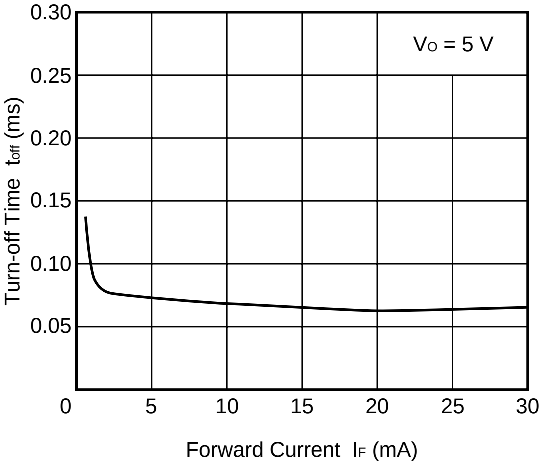
ON-STATE RESISTANCE DISTRIBUTION



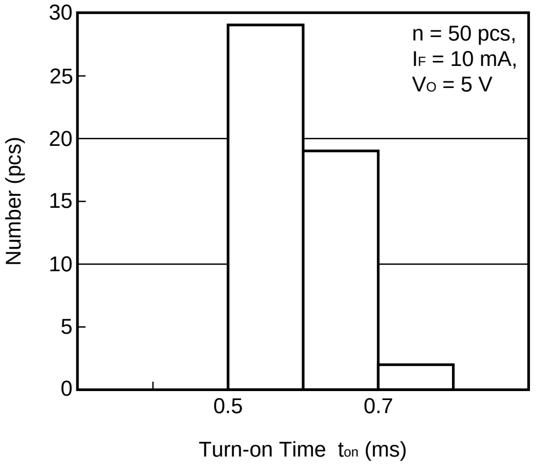
TURN-ON TIME vs. FORWARD CURRENT



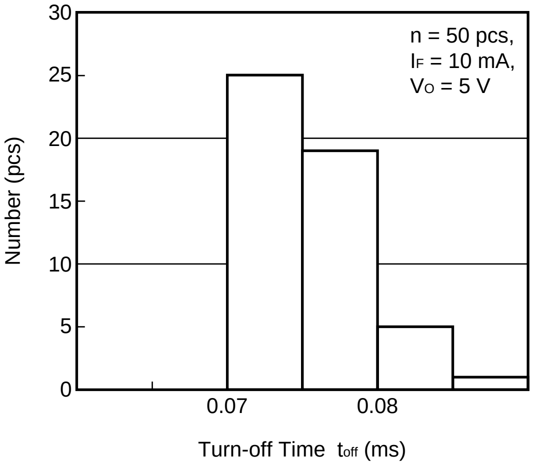
TURN-OFF TIME vs. FORWARD CURRENT



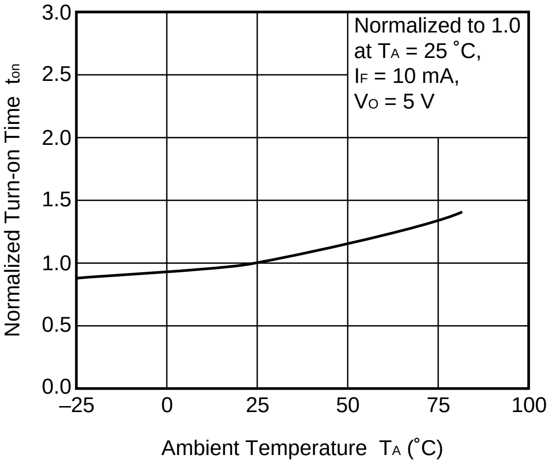
TURN-ON TIME DISTRIBUTION



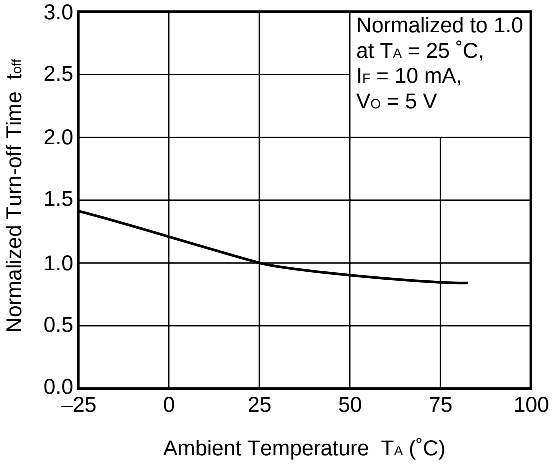
TURN-OFF TIME DISTRIBUTION



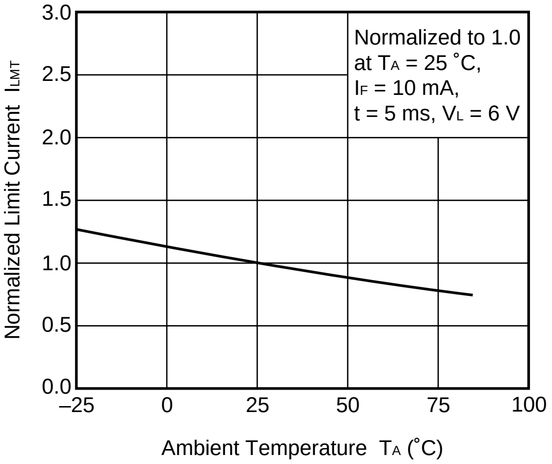
NORMALIZED TURN-ON TIME vs.
AMBIENT TEMPERTURE



NORMALIZED TURN-OFF TIME vs.
AMBIENT TEMPERTURE



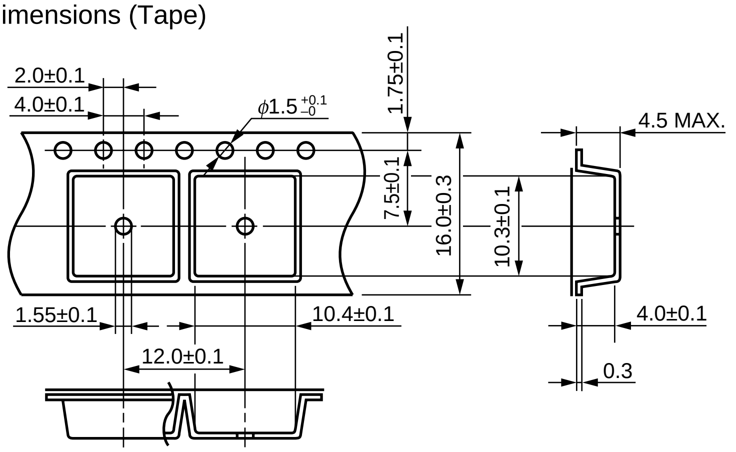
NORMALIZED LIMIT CURRENT vs.
AMBIENT TEMPERTURE



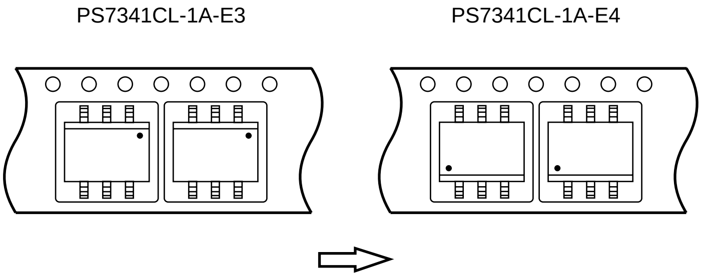
Remark The graphs indicate nominal characteristics.

★ TAPING SPECIFICATIONS (in millimeters)

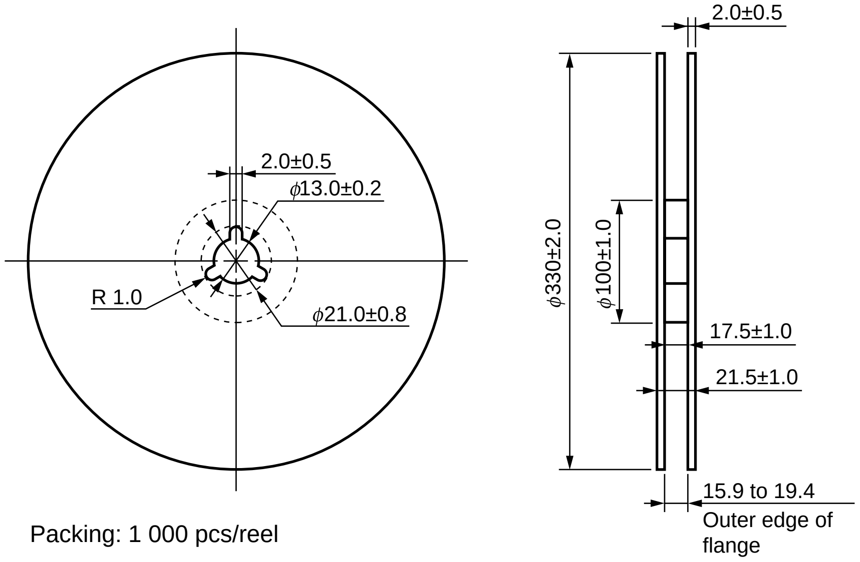
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)



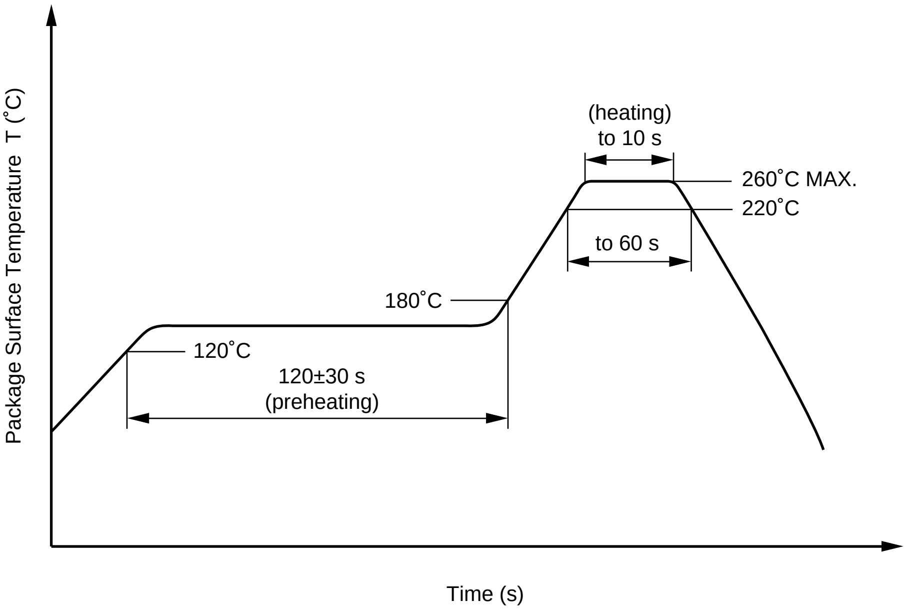
Packing: 1 000 pcs/reel

★ 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	Two
• 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
• 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 and chlorine-based cleaning solvent.

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M8E 00. 4 - 0110

SAFETY INFORMATION ON THIS PRODUCT

Caution GaAs Products	The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested. • Do not destroy or burn the product. • Do not cut or cleave off any part of the product. • Do not crush or chemically dissolve the product. • Do not put the product in the mouth. Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.

▶**For further information, please contact**

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