NEC

6 PIN DIP, HIGH ISOLATION VOLTAGE 1 ch OPTICAL COUPLED MOSFET

PS7341-1A
PS7341L-1A

FEATURES

- **HIGH ISOLATION VOLTAGE:**
  BV : 3750 Vr.m.s.
- **1 CHANNEL TYPE**
  1a output
- **DESIGNED FOR AC/DC SWITCHING LINE CHANGER**
- **SMALL PACKAGE:**
  6 pin DIP
- **LOW OFFSET VOLTAGE:**
- **SURFACE MOUNT TYPE LEAD:**
  PS7341L-1A
- **LOW LED OPERATING CURRENT**
  I_F = 2 mA
- **AVAILABLE IN TAPE AND REEL**

DESCRIPTION

PS7341-1A and PS7341L-1A are solid state relays containing a GaAs LED on the light emitting side (input side) and MOS FETs on the output side. They are suitable for analog signal control because of their low offset and high linearity.

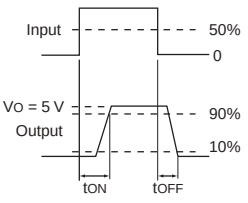
APPLICATIONS

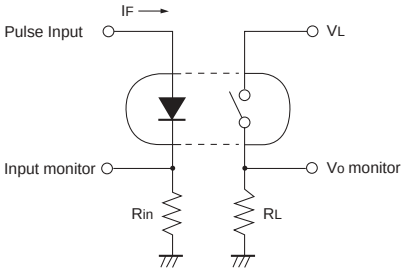
- **EXCHANGE EQUIPMENT**
- **MEASUREMENT EQUIPMENT**
- **FA/OA EQUIPMENT**

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

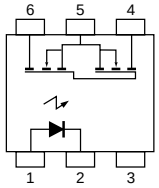
PART NUMBER				PS7341-1A, PS7341L-1A		
	SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V_F	Forward Voltage, I_F = 10 mA	V		1.2	1.4
	I_R	Reverse Current, V_R = 5 V	μA			5.0
MOS FET	I_{LOFF}	Off-State Leakage Current, V_D = 400 V	μA		0.03	1.0
	C_{OUT}	Output Capacitance, V = 0 V, f = 1 MHz	pF		65	
Coupled	I_{FON}	LED On-state Current, I_L = 150 mA	mA			2.0
	$R_{ON}1$	On-State Resistance, I_F = 10 mA, I_L = 10 mA	Ω		20	30
	$R_{ON}2$	On-State Resistance, I_F = 10 mA, I_L = 150 mA, t ≤ 10 ms	Ω		16	25
	t_{ON}	Turn-on Time[1] I_F = 10 mA, V_O = 5 V, PW ≤ 10 ms	ms		0.35	1.0
	t_{OFF}	Turn-off Time[1] I_F = 10 mA, V_O = 5 V, PW ≥ 10 ms	ms		0.03	0.2
	R_{I-O}	Isolation Resistance, V_{I-O} = 1.0 kV_{DC}	Ω	10^9		
	C_{I-O}	Isolation Capacitance, V = 0 V, f = 1 MHz	pF		1.1	

Notes:
1. Turn-on, Turn-off Time.





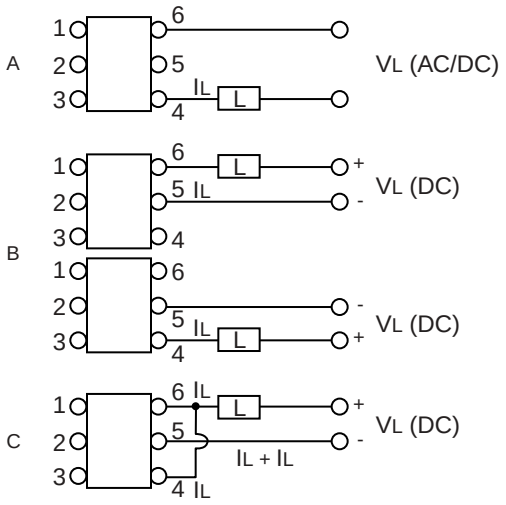
PS7341-1A, PS7341L-1A



ABSOLUTE MAXIMUM RATINGS[1] (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 Foward Current[2]		A	1
MOSFET				
V_L	Break Down Voltage		V	400
I_L	Continuous Load Current[3]	Conn. (A)	mA	150
		Conn. (B)	mA	200
		Conn. (C)	mA	300
I_{LP}	Pulse Load Current[4] AC/DC		mA	240
P_D	Power Dissipation		mW	560
COUPLED				
BV	Isolation Voltage[5]		Vr.m.s.	3750
P_T	Total Power Dissipation		mW	610
T_A	Operating Ambient Temp.		°C	-40 to +85
T_{STG}	Storage Temperature		°C	-40 to +125

Notes:
1. Operation in excess of any one of these parameters may result in permanent damage.
2. PW = 100 μs, Duty Cycle = 1 %
3. Conditions : $I_F \geq 2$ mA. The following types of load connections are available.



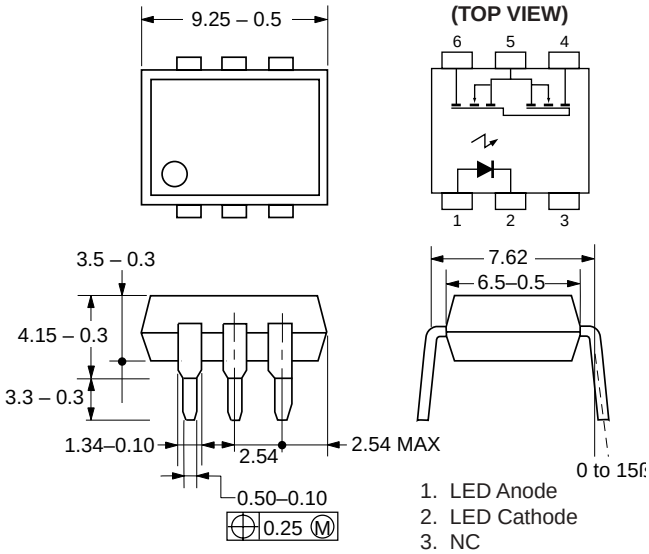
4. PW = 100 ms, 1 shot
5. AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output.

RECOMMENDED OPERATING CONDITIONS (T_A = 25°C)

PART NUMBER		PS7341-1A,PS7341L-1A			
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
I_F	LED Operating Current	mA	2	10	20
V_F	LED Off Voltage	V	0		0.5

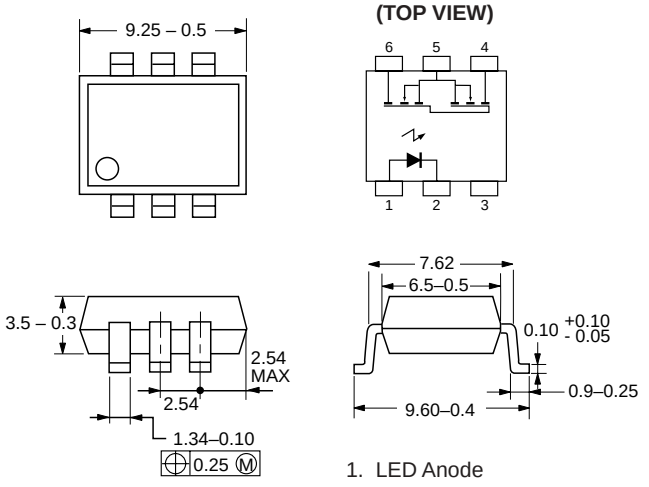
OUTLINE DIMENSIONS (Units in mm)

PS7341-1A



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

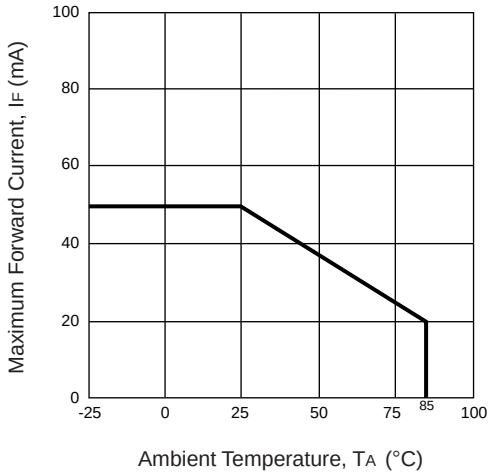
PS7341L-1A



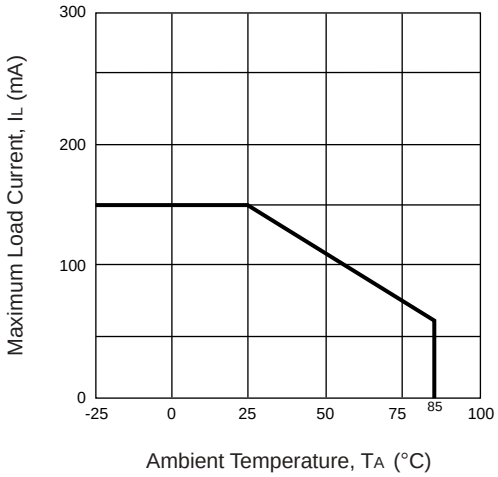
1. LED Anode
2. LED Cathode
3. NC
4. MOSFET Drain
5. MOSFET Source
6. MOS FET Drain

TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

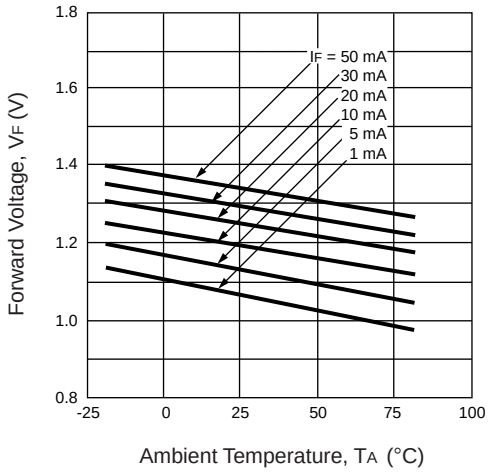
MAXIMUM FORWARD CURRENT vs. AMBIENT TEMPERATURE



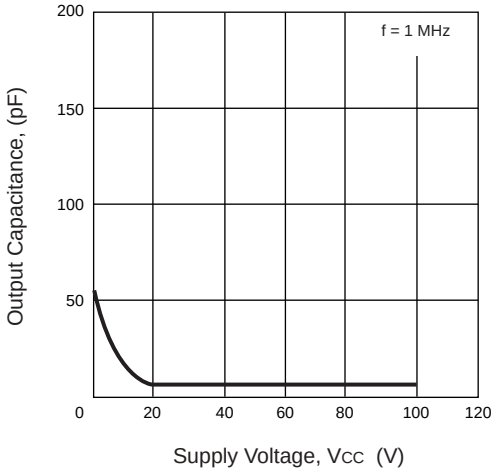
MAXIMUM LOAD CURRENT vs. AMBIENT TEMPERATURE



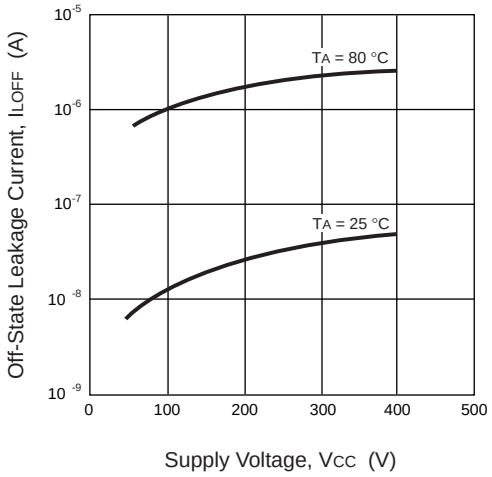
FORWARD VOLTAGE vs. AMBIENT TEMPERATURE



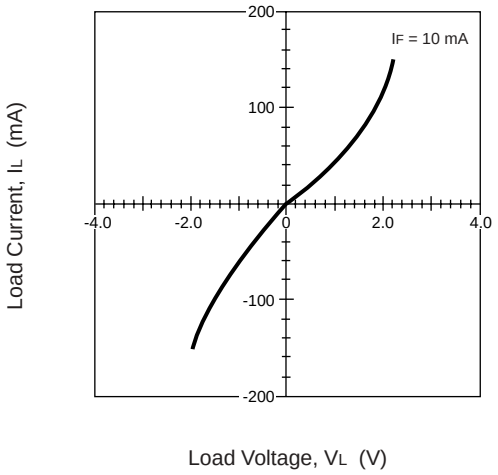
OUTPUT CAPACITANCE vs. SUPPLY VOLTAGE



OFF-STATE LEAKAGE CURRENT vs. SUPPLY VOLTAGE

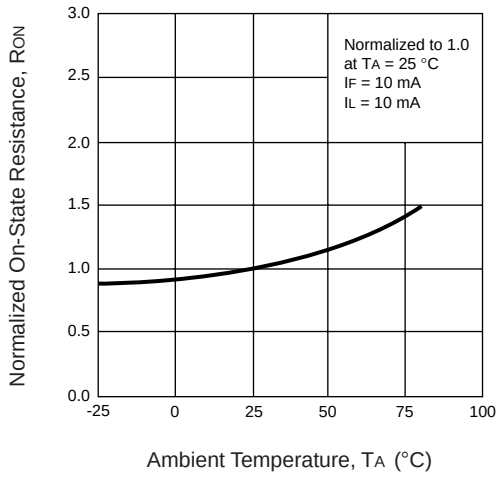


LOAD CURRENT vs. LOAD VOLTAGE

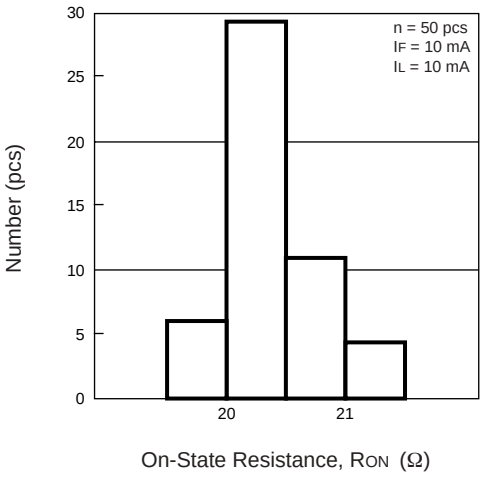


TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

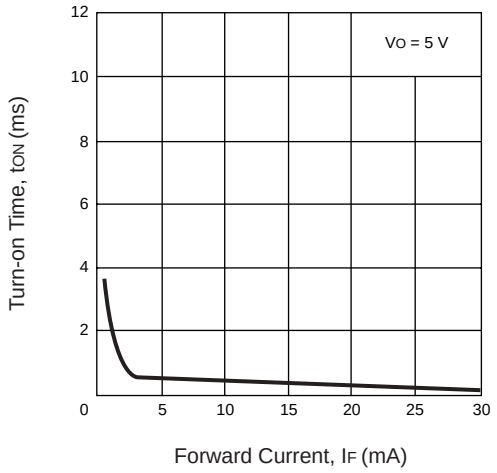
NORMALIZED ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE



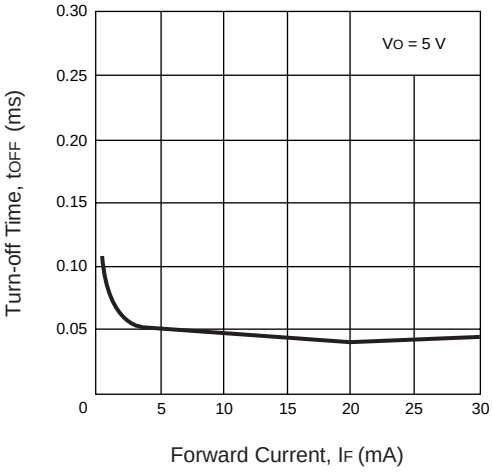
ON-STATE DISTRIBUTION



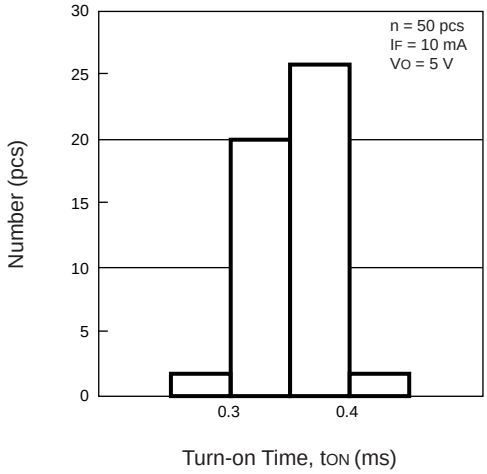
TURN-ON TIME vs. FORWARD CURRENT



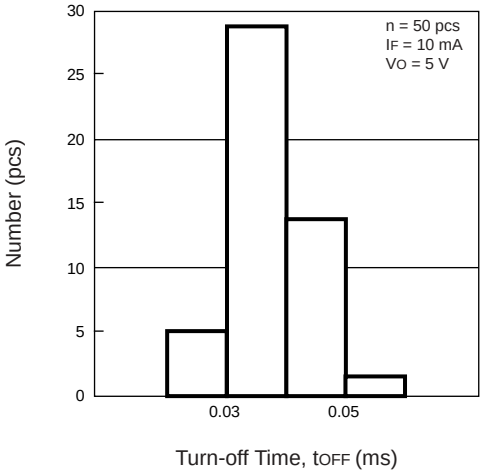
TURN-OFF TIME vs. FORWARD CURRENT



TURN-ON TIME DISTRIBUTION

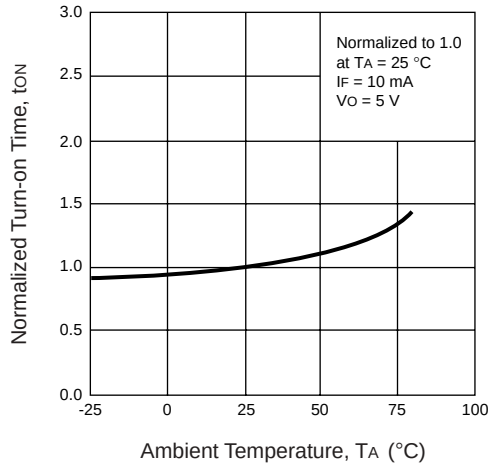


TURN-OFF TIME DISTRIBUTION

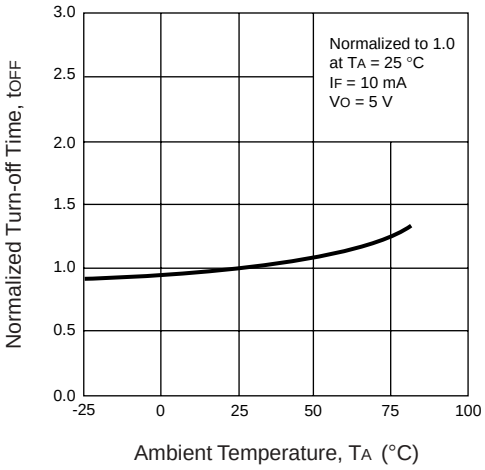


TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

NORMALIZED TURN-ON TIME vs. AMBIENT TEMPERATURE

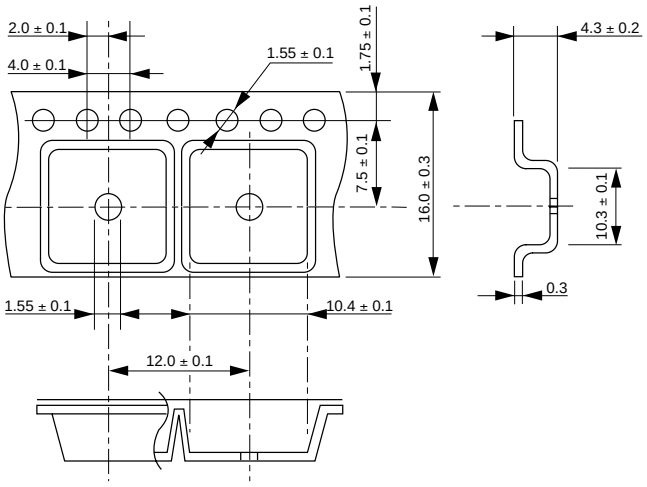


NORMALIZED TURN-OFF TIME vs. AMBIENT TEMPERATURE

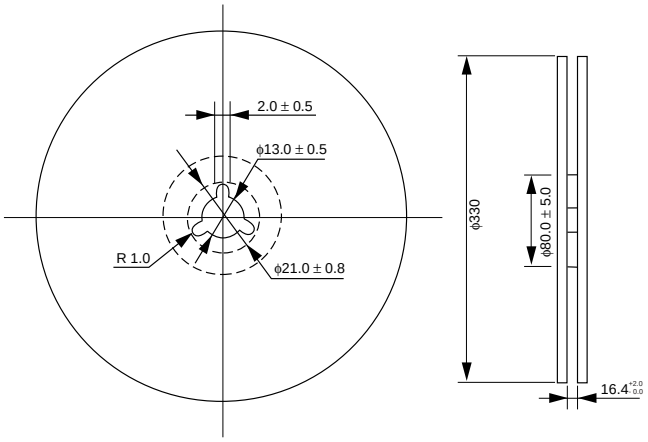


TAPING SPECIFICATIONS (Units in mm)

OUTLINE AND DIMENSIONS (TAPE)



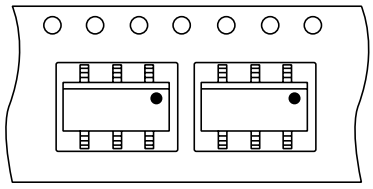
OUTLINE AND DIMENSIONS (REEL)



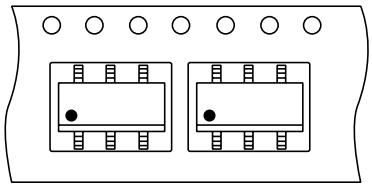
Notes:
1. Packaging : 1000 pcs/reel

TAPING DIRECTION

PS7341L-1A-E3



PS7341L-1A-E4

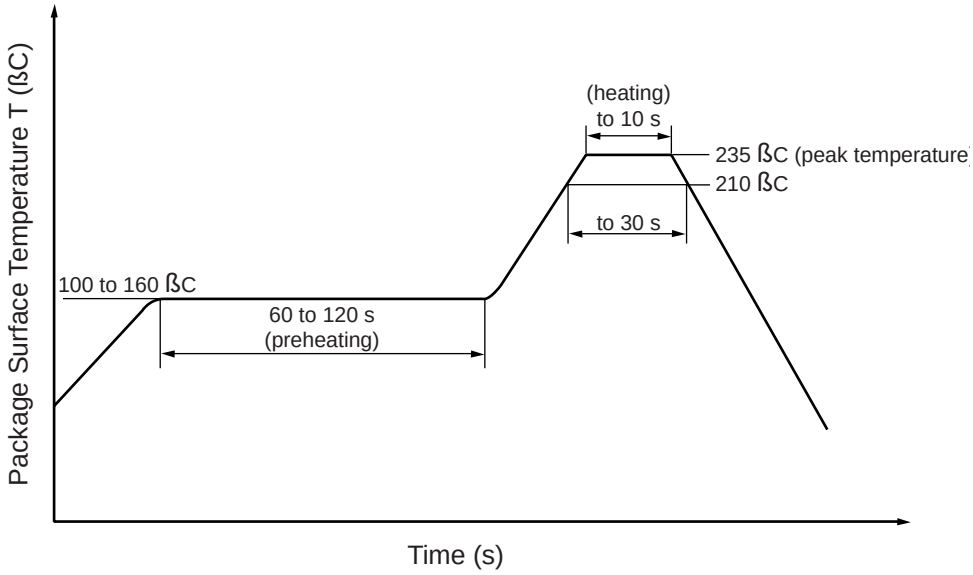


RECOMMENDED SOLDERING CONDITIONS

(1) Infrared reflow soldering

- **Peak reflow temperature**
  235 ˚C (package surface temperature)
- **Time of temperature higher than 210 ˚C**
  30 seconds or less
- **Number of reflows**
  One
- **Flux**
  Rosin flux containing small amount of chlorine (The flux with a max. chlorine content of 0.2 Wt % is recommended

Recommended Temperature Profile of Infrared Reflow



(2) Dip soldering

- **Temperature**
  260 ˚C or below (molten solder temperature)
- **Time**
  10 seconds or less
- **Number of times**
  One
- **Flux**
  Rosin flux containing small amount of chlorine (The flux with a max. chlorine content of 0.2 Wt % is recommended.)

(3) Cautions

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

  After opening the dry pack, solder the products within the valid storage period specified on the lable on the dry pack.