

### FEATURES

- **HIGH CURRENT TRANSFER RATIO:**  
CTR = 200% TYP @  $I_F = 1 \text{ mA}$
- **HIGH ISOLATION VOLTAGE:**  
 $BV = 3.75 \text{ k Vr.m.s.}$
- **SMALL THIN PACKAGE:**  
4 pin SOP
- **AVAILABLE IN TAPE AND REEL**

### DESCRIPTION

PS2711-1 is an optically coupled isolator containing a GaAs light emitting diode and an NPN silicon phototransistor in a plastic SOP (Small Out-Line Package) for high density applications.

### APPLICATIONS

- PROGRAMMABLE LOGIC CONTROLLERS
- SMALL POWER SUPPLY
- HYBRID IC
- MODEM/FAX

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

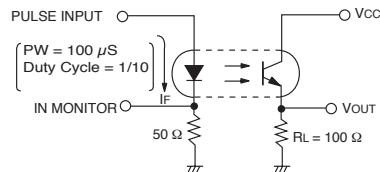
PART NUMBER			PS2711-1			
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX	
Diode	$V_F$	Forward Voltage, $I_F = 5 \text{ mA}$	V	1.15	1.4	
	$I_R$	Reverse Current, $V_R = 5 \text{ V}$	$\mu\text{A}$		5	
	$C_t$	Terminal Capacitance, $V = 0 \text{ V}$ , $f = 1.0 \text{ MHz}$	pF		30	
Transistor	$I_{CEO}$	Collector to Emitter Current, $I_F = 0 \text{ mA}$ , $V_{CE} = 40 \text{ V}$	nA		100	
Coupled	CTR	Current Transfer Ratio ( $I_C/I_F$ ) <sup>1</sup> , $I_F = 1 \text{ mA}$ , $V_{CE} = 5 \text{ V}$	%	100	200	400
	$V_{CE(sat)}$	Collector Saturation Voltage, $I_F = 1 \text{ mA}$ , $I_C = 0.2 \text{ mA}$	V			0.3
	RI-O	Isolation Resistance, $V_{in-out} = 1.0 \text{ kVDC}$	$\Omega$	$10^{11}$		
	CI-O	Isolation Capacitance, $V = 0$ , $f = 1.0 \text{ MHz}$	pF		0.4	
	$t_r$	Rise Time <sup>2</sup> , $V_{CC} = 5 \text{ V}$ , $I_C = 2 \text{ mA}$ , $R_L = 100 \Omega$	$\mu\text{s}$		4	
$t_f$	Fall Time <sup>2</sup> , $V_{CC} = 5 \text{ V}$ , $I_C = 2 \text{ mA}$ , $R_L = 100 \Omega$	$\mu\text{s}$		5		

Notes:

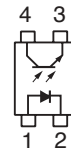
1. CTR Rank

- N: 100 to 400 (%)
- K: 200 to 400 (%)
- L: 150 to 300 (%)
- M: 100 to 200 (%)

2. Test Circuit for Switching Time



PS2711-1



**ABSOLUTE MAXIMUM RATINGS<sup>1</sup>** (T<sub>A</sub> = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
Diode			
V <sub>R</sub>	Reverse Voltage	V	6
I <sub>F</sub>	Forward Current (DC)	mA	50
ΔP <sub>D</sub> /°C	Power Dissipation Derating	mW/°C	0.8
P <sub>D</sub>	Power Dissipation	mW	80
I <sub>F(Peak)</sub>	Peak Forward Current PW = 100 μs, Duty Cycle 1%	A	0.5
Transistor			
V <sub>CEO</sub>	Collector to Emitter Voltage	V	40
V <sub>ECO</sub>	Emitter to Collector Voltage	V	5
I <sub>C</sub>	Collector Current	mA	40
ΔP <sub>C</sub> /°C	Power Dissipation Derating	mW/°C	1.5
P <sub>C</sub>	Power Dissipation	mW	150
Coupled			
BV	Isolation Voltage <sup>2</sup>	V <sub>r.m.s.</sub>	3750
T <sub>A</sub>	Operating Ambient Temp.	°C	-55 to +100
T <sub>STG</sub>	Storage Temperature	°C	-55 to +150

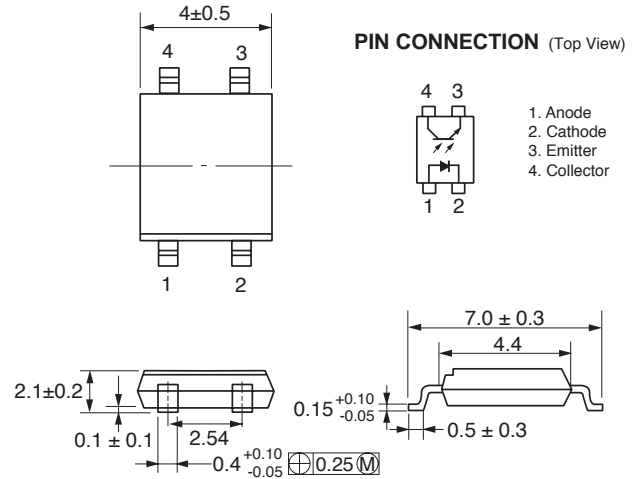
Notes:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. AC voltage for 1 minute at T<sub>A</sub> = 25 °C, RH = 60 % between input and output.

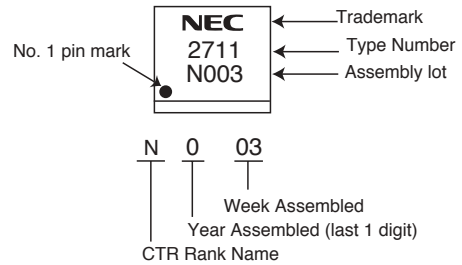
**ORDERING INFORMATION**

PART NUMBER	PACKAGE	PACKING STYLE
PS2711-1	4-pin SOP	50 pcs (Tape 50 pcs cut)
PS2711-1-F3		Embossed Tape 3500 pcs/reel
PS2711-1-F4		

**OUTLINE DIMENSIONS** (Units in mm)

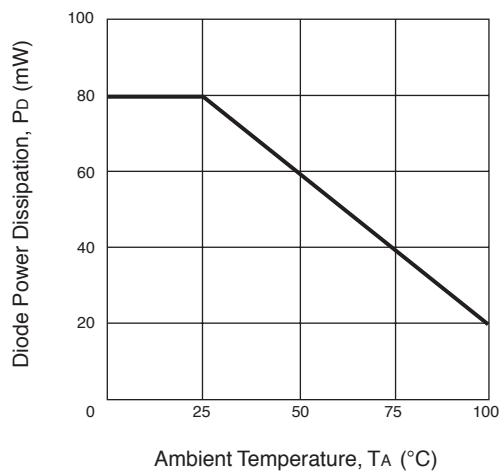


**PACKAGE MARKING**

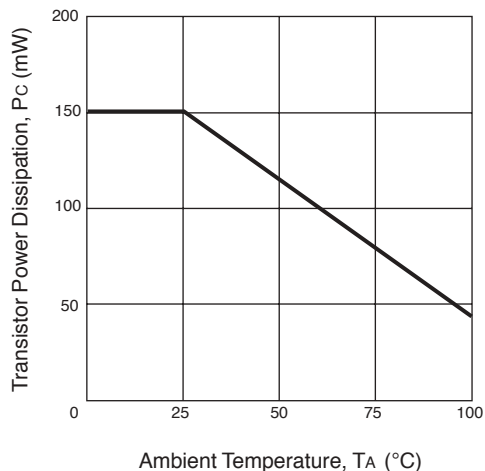


**TYPICAL PERFORMANCE CURVES** ( $T_A = 25\text{ }^\circ\text{C}$ )

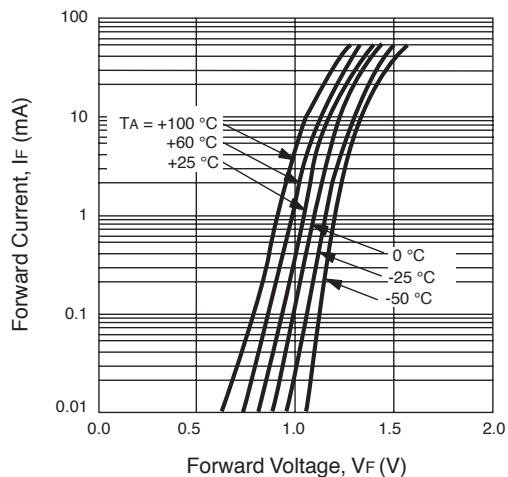
**DIODE POWER DISSIPATION vs. AMBIENT TEMPERATURE**



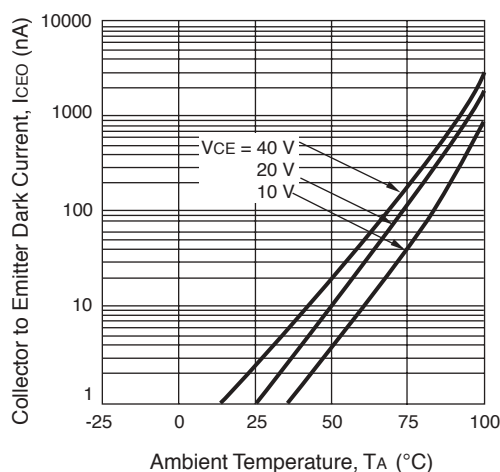
**TRANSISTOR POWER DISSIPATION vs. AMBIENT TEMPERATURE**



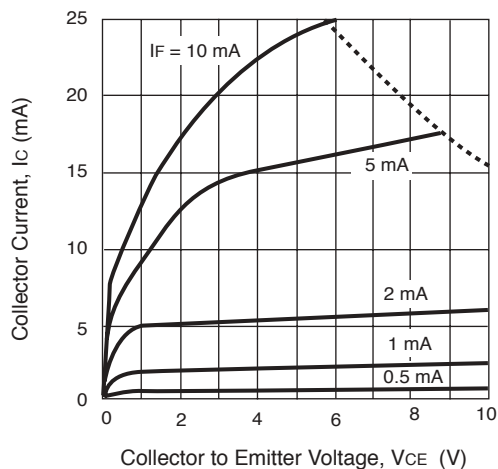
**FORWARD CURRENT vs. FORWARD VOLTAGE**



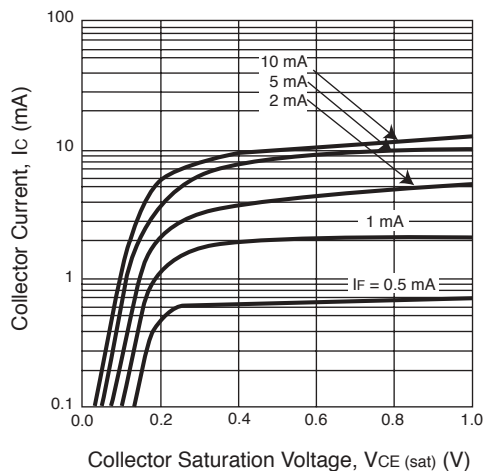
**COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE**



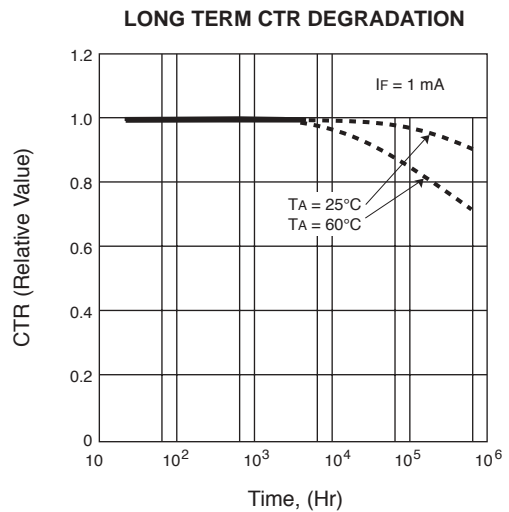
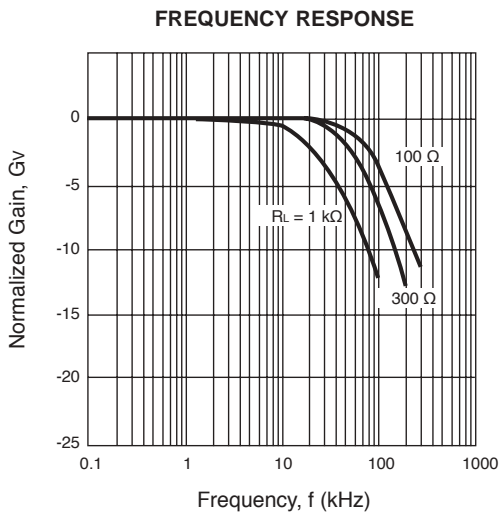
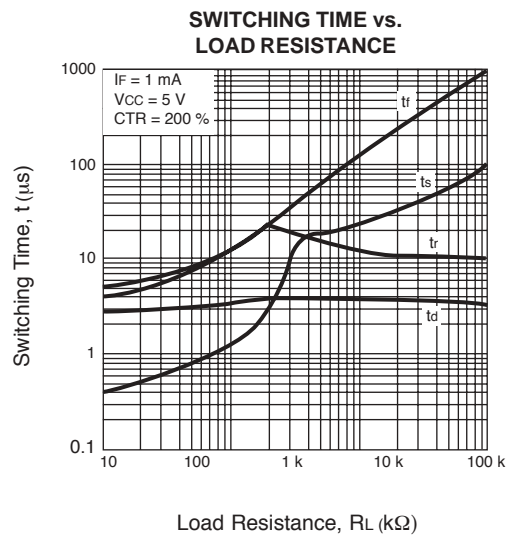
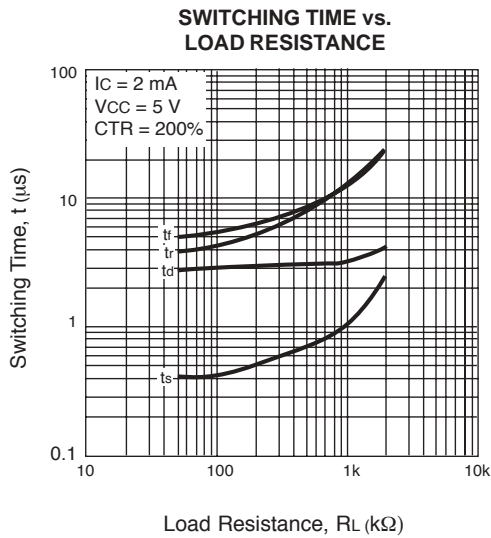
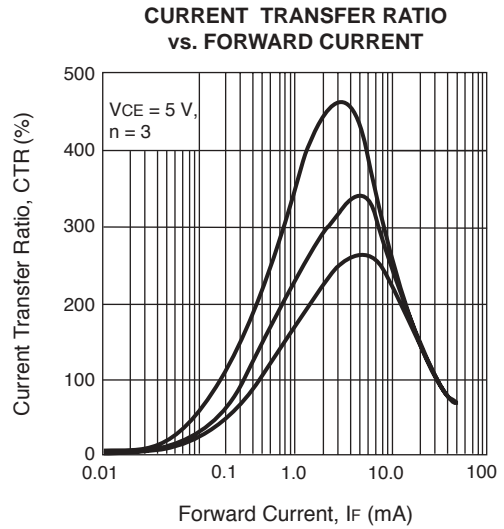
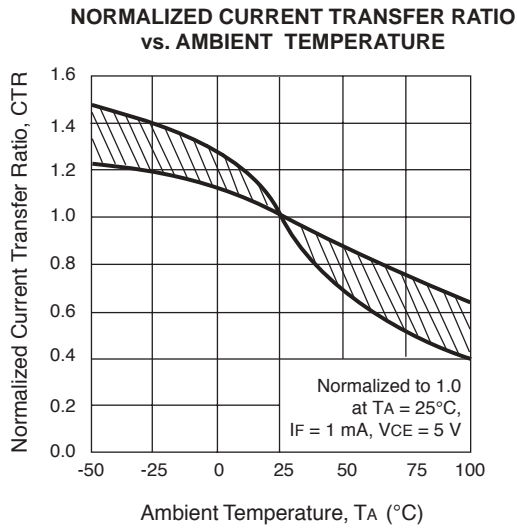
**COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE**



**COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE**

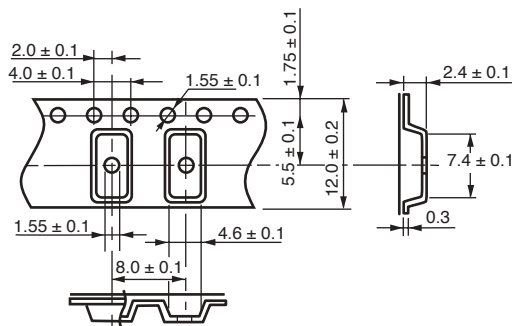


TYPICAL PERFORMANCE CURVES (TA = 25 °C)

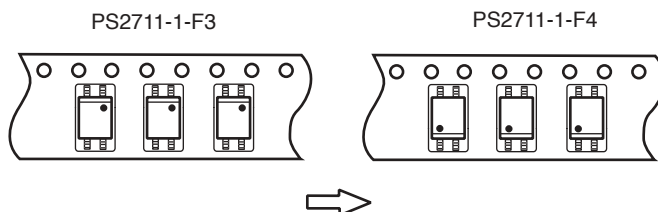


# PS2711-1 TAPING SPECIFICATIONS (Units in mm)

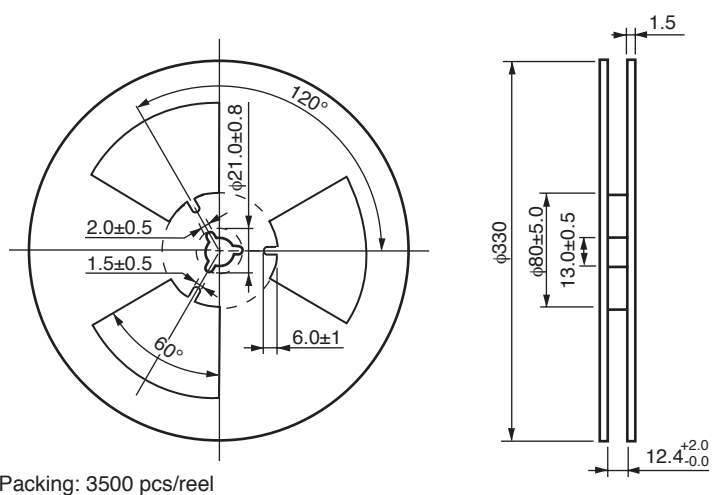
## Outline and Dimensions (Tape)



## Tape Direction



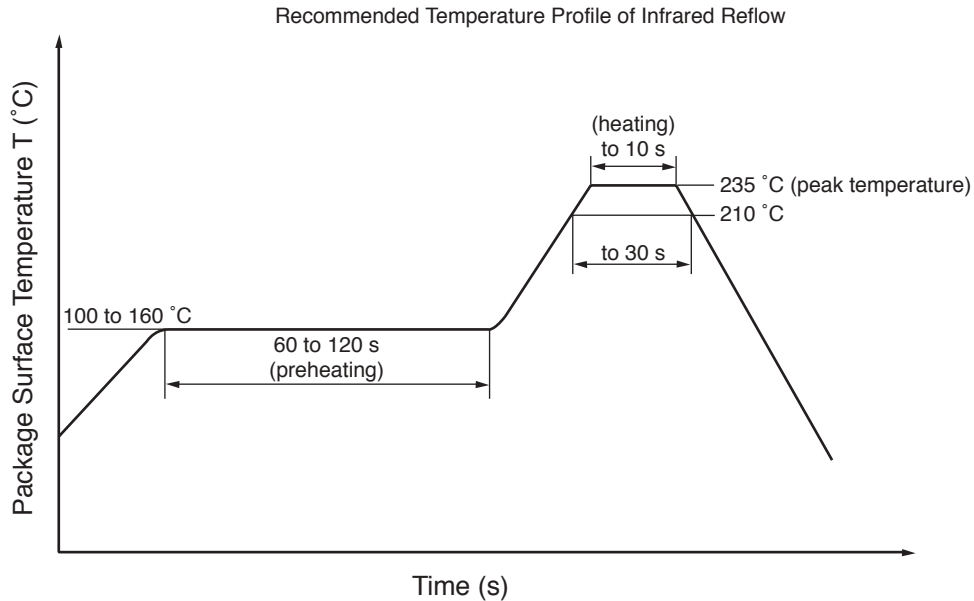
## Outline and Dimensions (Reel)



**RECOMMENDED SOLDERING CONDITIONS**

**(1) Infrared reflow soldering**

- Peak reflow temperature 235 °C or below (package surface temperature)
- Time of temperature higher than 210 °C 30 seconds or less
- 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.)



**(2) Dip soldering**

- Temperature 260 °C or below (molten solder temperature)
- Time 10 seconds or less
- 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.
- Noise  
Be aware that when voltage is applied suddenly between the photocoupler's input and output or between collector-emitters at startup, the output side may enter the on state even if the voltage is within the absolute maximum ratings.

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