NEC

HIGH ISOLATION VOLTAGE HIGH COLLECTOR TO EMITTER VOLTAGE SOP PHOTOCOUPLER

PS2732-1, -2, -4
PS2733-1, -2, -4

FEATURES

- **HIGH ISOLATION VOLTAGE**
  BV: 2.5 k $V_{r.m.s.}$ MIN
- **HIGH COLLECTOR TO EMITTER VOLTAGE**
  V_{CEO}: 300 V MIN: PS2732-1,-2,-4
  V_{CEO}: 350 V MIN: PS2733-1,-2,-4
- **SOP (SMALL OUT-LINE PACKAGE)**
- **ULTRA HIGH CURRENT TRANSFER RATIO**
  CTR: 4000% TYP
- **TAPING PRODUCT NUMBER (Only -1 Type)**
  PS2732-1-E3, F3
  PS2733-1-E3, F3

DESCRIPTION

The PS2732 and PS2733 are optically coupled isolators containing a GaAs light emitting diode and an NPN silicon Darlington-connected phototransistor. Each is mounted in a plastic SOP (Small Out-line Package) for high density applications.

APPLICATIONS

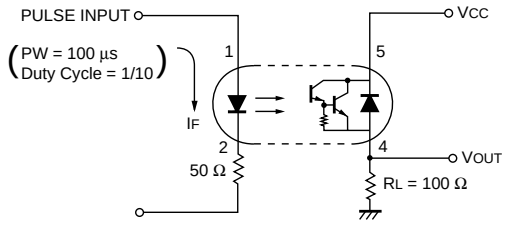
Interface circuit for various instrumentations and control equipment.

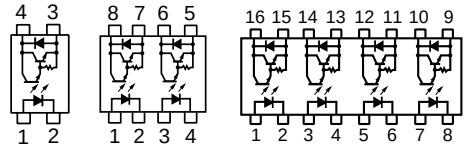
- **REPLACEMENT FOR RELAY IN PULSE-DIAL CIRCUIT**
- **HIGH CTR CIRCUIT APPLICATIONS**

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER				PS2732-1, -2, -4, PS2733-1, -2, -4		
	SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V_F	Forward Voltage, I_F = 10 mA	V		1.15	1.4
	I_R	Reverse Current, V_R = 5 V	μA			5
	C_t	Junction Capacitance, V = 0, f = 1.0 MHz	pF		30	
Transistor	I_{CEO}	Collector to Emitter Dark Current, V_{CE} = 300 V, I_F = 0	nA			400
Coupled	CTR	Current Transfer Ratio, I_F = 1 mA, V_{CE} = 2 V	%	1500	4000	
	$V_{CE(sat)}$	Collector Saturation Voltage, I_F = 1 mA, I_C = 2 mA	V			1.0
	R_{1-2}	Isolation Resistance, V_{IN-OUT} = 1.0 k V_{DC}	Ω	10^{11}		
	C_{1-2}	Isolation Capacitance, V = 0, f = 1.0 MHz	pF		0.4	
	t_r	Rise Time[1], V_{CC} = 5 V, I_C = 10 mA, R_L = 100 Ω	μs		100	
	t_f	Fall Time[1], V_{CC} = 5 V, I_C = 10 mA, R_L = 100 Ω	μs		100	

Note:
1. Test Circuit for Switching Time





PS2732-1 PS2733-1 PS2732-2 PS2733-2 PS2732-4 PS2733-4

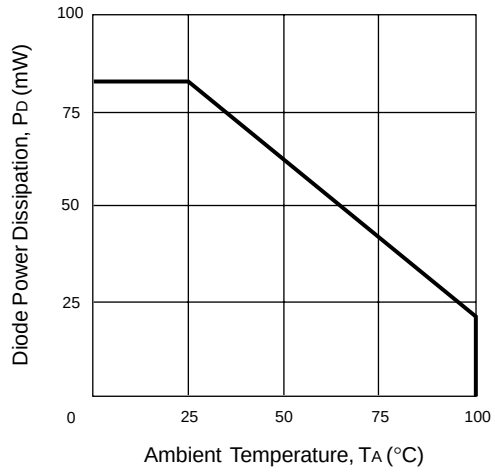
ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS	
			PS2732-1 PS2733-1	PS2732-2, -4 PS2733-2, -4
Diode				
V_R	Reverse Voltage	V	6	6
I_F	Forward Current	mA	50	50
P_D	Power Dissipation	mW/Ch	80	80
$I_{F\ (PEAK)}$	Peak Forward Current (PW = 100 μs, Duty Cycle 1%)	A	1	1
Transistor				
V_{CEO}	Collector to Emitter Voltage (I_C = ImA, I_B = 0)	V	300/350	300/350
V_{EBO}	Emitter to Base Breakdown Volt (I_E = 100μA, I_B = 0)	V	6	6
I_C	Collector Current	mA/Ch	150	150
P_C	Power Dissipation	mW/Ch	150	120
Coupled				
BV	Isolation Voltage[2]	$V_{r.m.s.}$	2500	
T_{OP}	Operating Temperature	°C	-55 to +100	
T_{STG}	Storage Temperature	°C	-55 to +150	

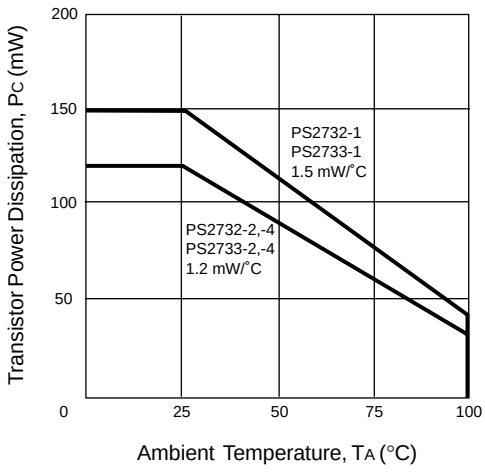
Notes:
1. Operation in excess of any one of these parameters may result in permanent damage.
2. AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and ouput.

TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

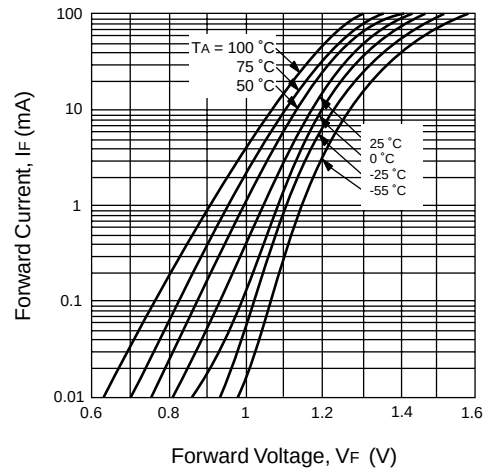
DIODE POWER DISSIPATION vs. AMBIENT TEMPERATURE



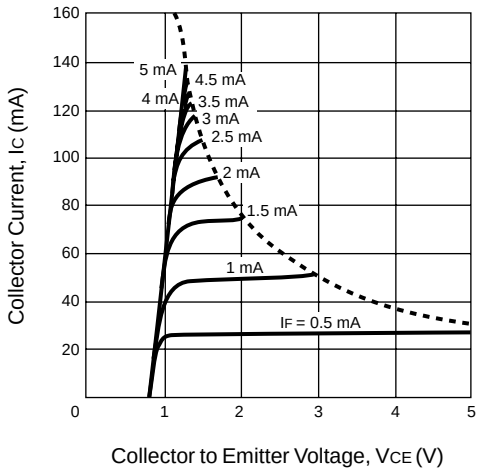
TRANSISTOR POWER DISSIPATION vs. AMBIENT TEMPERATURE



FORWARD CURRENT vs. FORWARD VOLTAGE

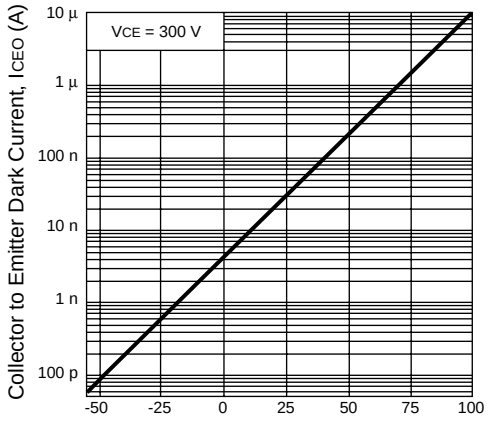


COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE

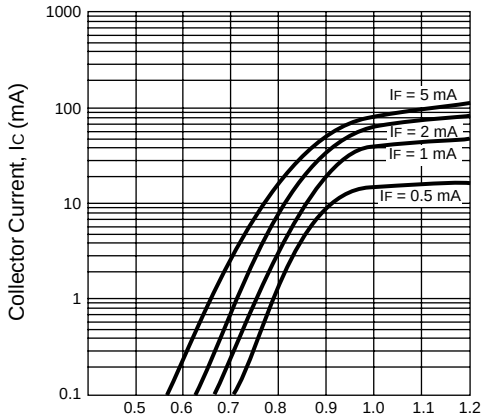


TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

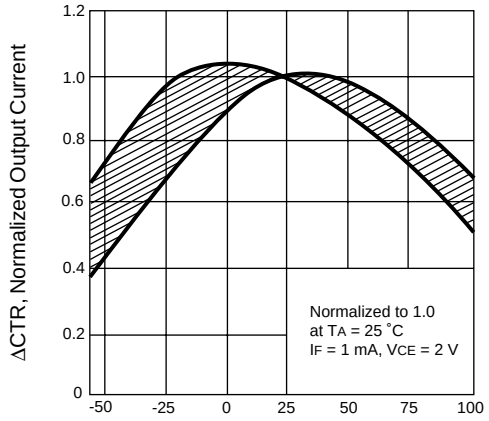
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



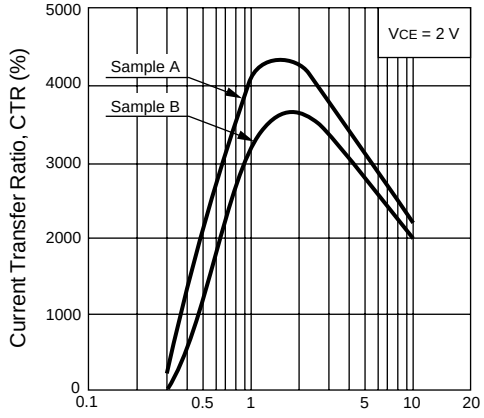
COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE



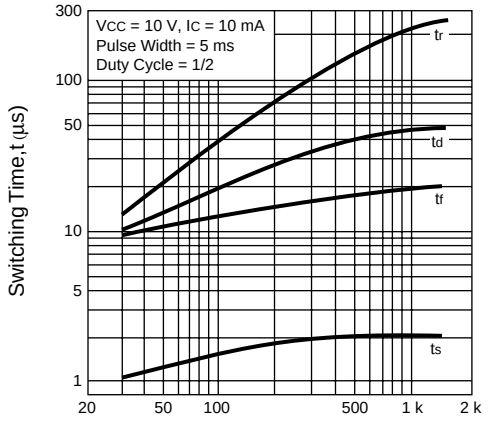
NORMALIZED OUTPUT CURRENT vs. AMBIENT TEMPERATURE



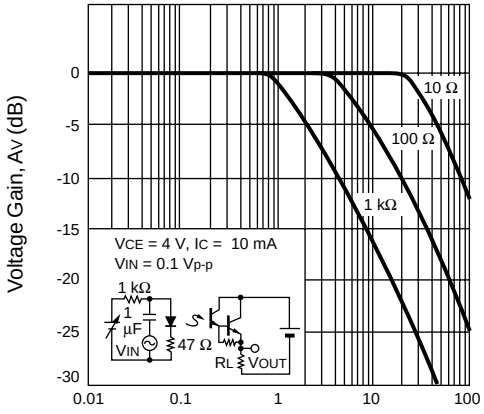
CURRENT TRANSFER RATIO (CTR) vs. FORWARD CURRENT



SWITCHING TIME vs. LOAD RESISTANCE

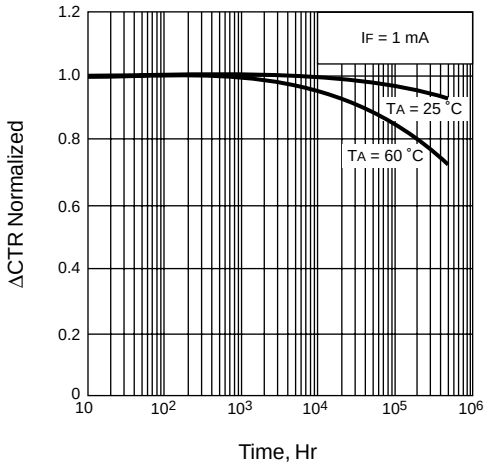


FREQUENCY RESPONSE



TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

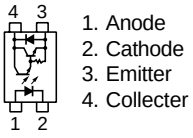
CTR DEGRADATION



OUTLINE DIMENSIONS (Units in mm)

PS2732-1, PS2733-1

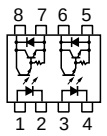
PIN CONNECTION
(Top View)



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

PS2732-2, PS2733-2

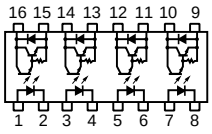
PIN CONNECTION
(Top View)



1. 3. Anode
2. 4. Cathode
5. 7. Emitter
6. 8. Collecter

PS2732-4, PS2733-4

PIN CONNECTION
(Top View)



1, 3, 5, 7. Anode
2, 4, 6, 8. Cathode
9, 11, 13, 15. Emitter
10, 12, 14, 16. Collector