NEC

CURRENT LIMIT TYPE 4 PIN SOP 400 V 1-CH OCMOS FET

PS7241C-1A

FEATURES

- **LIMIT CURRENT:**
  I_{LMT} = 155 to 210 mA
- **SMALL AND THIN PACKAGE:**
  4 pin SOP, Height = 2.1 mm
- **1 CHANNEL TYPE:**
  1a output
- **LOW LED OPERATING CURRENT:**
  I_F = 2 mA
- **DESIGNED FOR AC/DC SWITCHING LINE CHANGER**
- **LOW OFFSET VOLTAGE**
- **SURFACE MOUNT AVAILABLE:**
  PS7241C-1A-E3, E4, F3, F4

DESCRIPTION

The PS7241C-1A is a solid state relay containing GaAs LEDs on the light emitting side (input side) and MOS FETs including current control circuit on the output side. The currrent control circuit of the OCMOS FET protects this device from thermal breakdown and output circuit.

It is suitable for analog signal control because of its low offset and high linearity.

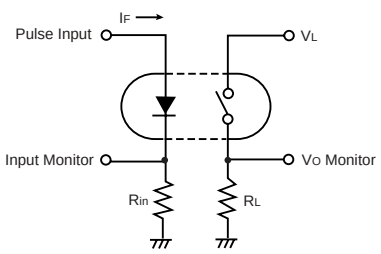
APPLICATIONS

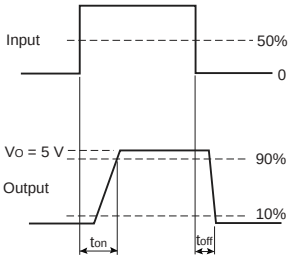
- **LAPTOP PC, PDA**
- **MODEM CARD**
- **TELEPHONE, FAX**
- **MEASUREMENT EQUIPMENT**

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

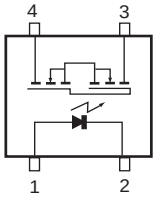
PART NUMBER					PS7241C-1A		
	SYMBOLS	PARAMETERS		UNITS	MIN	TYP	MAX
Diode	V_F	Forward Voltage, I_F = 10 mA		V		1.2	1.4
	I_R	Reverse Current, V_R = 5 V		μA			5.0
MOS FET	I_{LOFF}	Off-State Leakage Current, V_D = 400 V		μA			1.0
	C_{OUT}	Output Capacitance, V_D = 0 V, f = 1 MHz		pF		65	
Coupled	I_{Fon}	LED On-State Current, I_L = 120 mA		mA			2.0
	R_{on1}	On-state Resistance,	I_F = 10 mA, I_L = 10 mA	Ω		28	35
	R_{on2}		I_F = 10 mA, I_L = 120 mA	Ω		24	30
	t_{ON}	Turn-on Time[1],	I_F = 10 mA, V_O = 5 V, PW ≥ 10 ms	ms		0.5	2.0
	t_{OFF}	Turn-off Time[1]		ms		0.07	0.2
	R_{I-O}	Isolation Resistance, V_{I-O} = 1.0 kVDC		Ω	10^9		
	C_{I-O}	Isolation Capacitance, V = 0 V, f = 1 MHz		pF		0.5	
	I_{LMT}	Limit Current, I_F = 10 mA, V_L = 6 V, t = 5 ms		mA	155	180	210

Note:
1. Test Circuit for Switching Time





PS7241C-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 Forward Current[2]	A	1
MOSFET			
V_L	Breakdown Voltage	V	400
I_L	Continuous Load Current	mA	120
I_{LP}	Pulse Load Current[3] (AC/DC connection)	mA	120
P_D	Power Dissipation	mW	300
Coupled			
BV	Isolation Voltage[4]	Vr.m.s.	1500
P_T	Total Power Dissipation	mW	350
T_A	Operating Ambient Temp.	°C	-40 to +80
T_{STG}	Storage Temperature	°C	-40 to +100

RECOMMENDED OPERATING CONDITIONS (T_A = 25°C)

PART NUMBER		PS7241C-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

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

OUTLINE DIMENSIONS (Units in mm)