

Optoisolator

1CH AC/DC BJT SMD-4

OPI150ADBEL814A

MERITEK

FEATURE

- Current Transfer Ratio: 20%~300%
- Isolation Voltage: 5000 Vrms
- High CTR with Low Input Current
- Low Coupling Capacitance
- Application: Programmable Controller, Relay Contact Monitor, HF Power Supply Feedback Control, AC Line/Digital Logic, Telegraph Line Receiver
- In Accordance with Safety Class UL1577 Standard

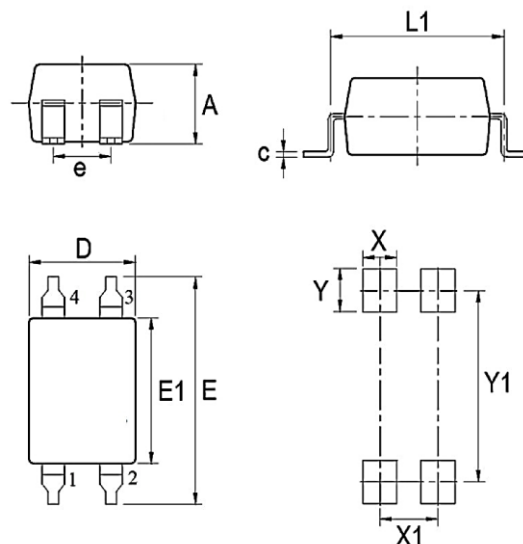


MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Input Forward Current		I_F	± 60	mA
Input Peak Forward Current	Pulse width $t=10\mu s$	I_{FP}	1	A
Input Power Dissipation	$T_A=25^\circ C$	P_I	100	mW
	Derating Factor (above $100^\circ C$)		2.9	mW/ $^\circ C$
Output Power Dissipation	$T_A=25^\circ C$	P_C	150	mW
	Derating Factor (above $100^\circ C$)		5.8	mW/ $^\circ C$
Output Collector-Emitter Voltage		V_{CEO}	80	V
Output Emitter-Collector Voltage		V_{ECO}	6	V
Isolation Voltage	AC for 60sec, RH40~60%	V_{ISO}	5000	V_{RMS}
Total Power Dissipation		P_T	200	mW
Operating Temperature Range		T_{Opr}	$-55 \sim +110$	$^\circ C$
Storage Temperature Range		T_{Stg}	$-55 \sim +125$	$^\circ C$
Soldering Temperature	For 10 sec	T_{SOL}	260	$^\circ C$

DIMENSIONS

Item	Min (mm)	Max (mm)	Pin Layout	
A	3.30	3.90	1. LED Anode 3. Emitter 2. LED Cathode 4. Collector	
c	0.25			
D	4.28	4.88		
E	--	10.30		
E1	6.20	6.80		
e	2.54			
L1	7.62			
X	1.71			
X1	2.54			
Y	1.68			
Y1	9.39			



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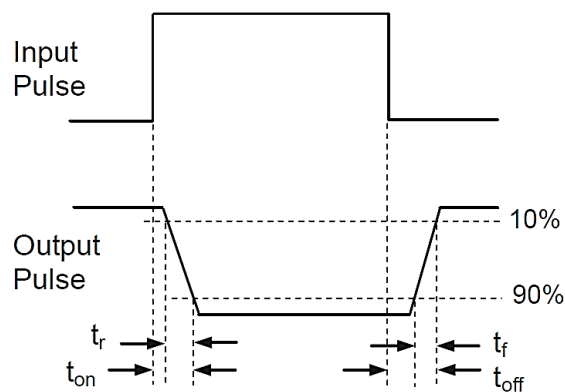
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ELECTRICAL CHARACTERISTICS

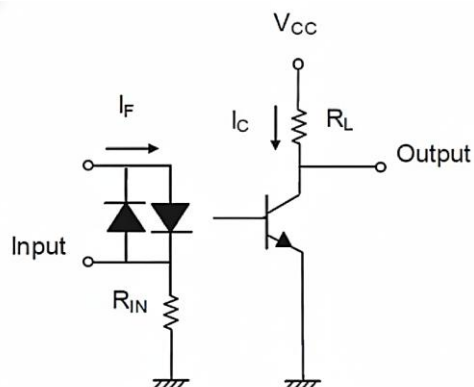
Input Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Forward Voltage	$I_F = \pm 20\text{mA}$	V_F	--	1.2	1.4	V
Input Capacitance	$V = 0, f = 1\text{KHz}$	C_{in}	--	50	250	pF
Output Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Collector-Emitter Dark Current	$V_{CE} = 20\text{V}, I_F = 0\text{mA}$	I_{CEO}	--	--	100	nA
Collector-Emitter Breakdown Voltage	$I_C = 0.1\text{mA}$	BV_{CEO}	80	--	--	V
Emitter-Collector Breakdown Voltage	$I_E = 0.1\text{mA}$	BV_{ECO}	6	--	--	V
Coupled Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Current Transfer Ratio	$I_F = \pm 1\text{mA}, V_{CE} = 5\text{V}$	CTR	50	--	500	%
CTR Symmetry	$I_F = \pm 1\text{mA}, V_{CE} = 5\text{V}$	--	0.7	--	1.3	--
Collector-Emitter Saturation Voltage	$I_F = \pm 20\text{mA}, I_C = 1\text{mA}$	$V_{CE(SAT)}$	--	0.05	0.2	V
Isolation Resistance	$V_{IO} = 500\text{V}_{DC}, RH40 \sim 60\%$	R_{iso}	5×10^{10}	10^{11}	--	Ω
Cut-off Frequency	$V_{CE} = 5\text{V}, I_C = 2\text{mA}, R_L = 100\Omega, -3\text{dB}$	f_c	--	80	--	kHz
Isolation Capacitance	$V_{IO} = 0\text{V}, f = 1\text{MHz}$	C_{iso}	--	0.6	1.0	pF
Rise Time	$V_{CE} = 2\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$	t_r	--	--	18	μs
Fall Time	$V_{CE} = 2\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$	t_f	--	--	18	μs

Note: $T_A = 25^\circ\text{C}$ unless otherwise noted.

Switching Time Waveform

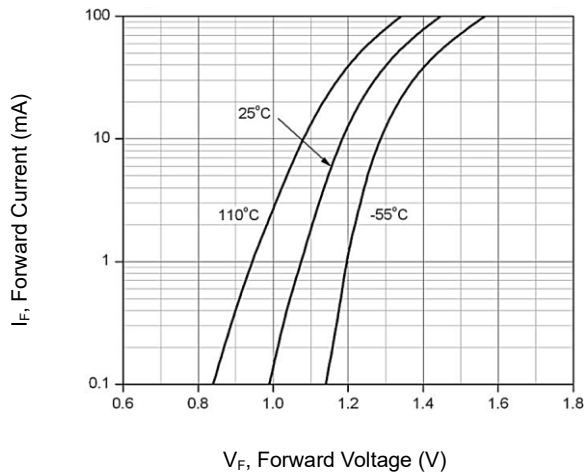


Switching Test Circuit

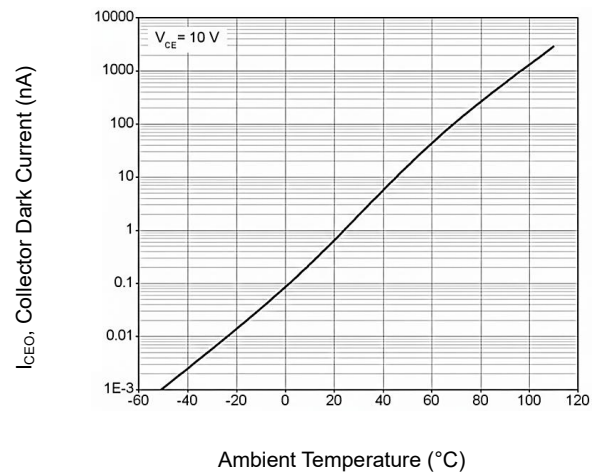


CHARACTERISTIC CURVES

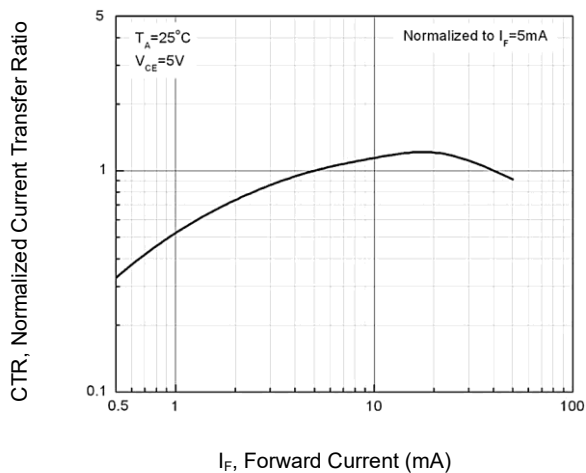
Forward Current vs. Forward Voltage



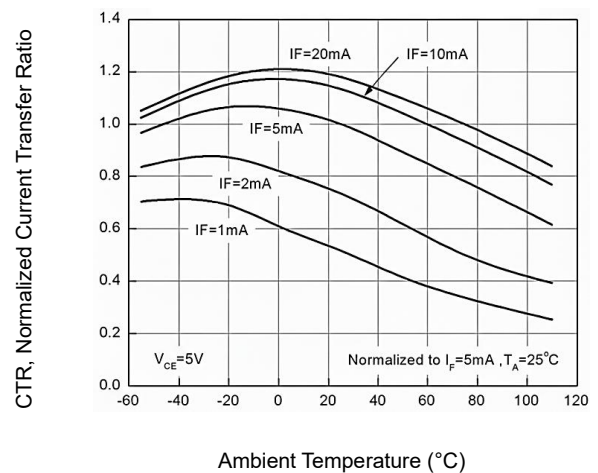
Collector Dark Current vs. Temperature



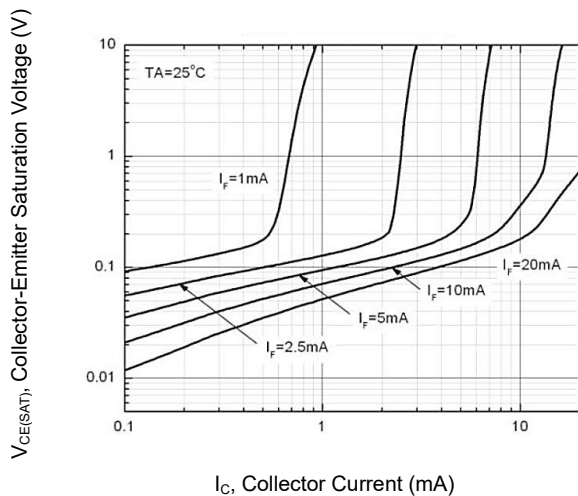
Relative Current Transfer Ratio vs. Forward Current



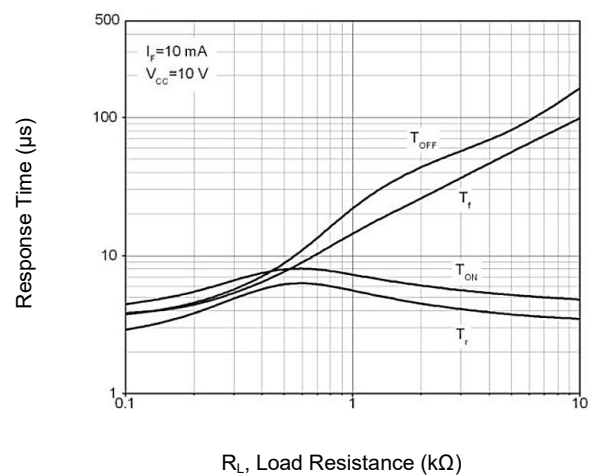
Relative Current Transfer Ratio vs. Temperature



Collector-Emitter Saturation Voltage vs. Forward Current

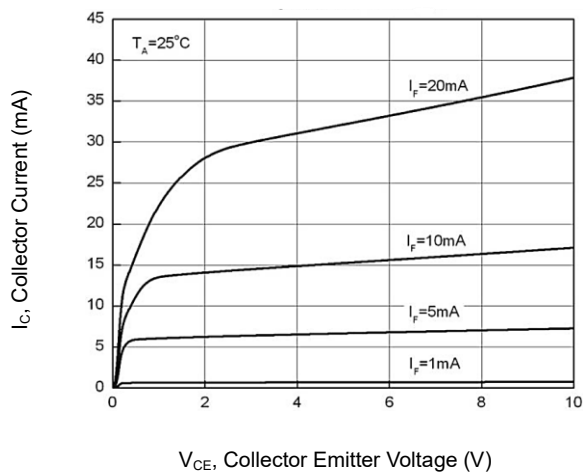


Response Time vs. Load Resistance



CHARACTERISTIC CURVES

Collector Current vs. Collector Emitter Voltage



Collector Current vs. Collector Emitter Voltage

