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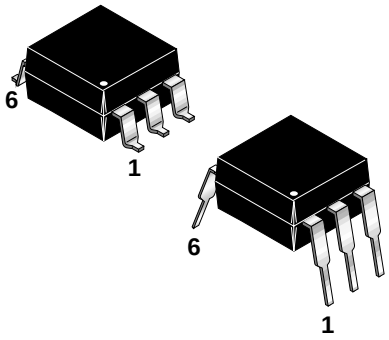
HIGH VOLTAGE 6-PIN PHOTOTRANSISTOR OPTOCOUPLERS

CNW11AV-1 CNW11AV-2 CNW11AV-3

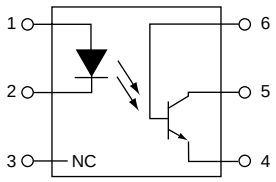
DESCRIPTION

The CNW11AV series are high voltage optocouplers in a wide body dual-in-line package (DIP).

Each optocoupler consists of a GaAs infrared emitter optically coupled to a silicon npn phototransistor with the base connected.



SCHEMATIC



CNW11AV-1/2/3

PIN 1. ANODE
2. CATHODE
3. NO CONNECTION
4. EMITTER
5. COLLECTOR
6. BASE

FEATURES

- Minimum 2 mm isolation thickness between emitter and receiver
- A wide body encapsulation with a pin distance of 10.16 mm
- An external clearance 0f 9.6 mm minimum and an external creepage of 10 mm minimum
- High current transfer ratio and low saturation voltage, making the device suitable for use with TTL integrated circuits
- High degree of AC and DC insulation (4000 V (RMS) and 5656 V (DC))
- Collector-emitter breakdown Voltage: 70 V
- Low isolation capacitance of 0.5 pF maximum
- UL recognized (File # E90700)
- VDE recognized (File # 76876)
  - Ordering option ‘300’ (e.g. CNW11AV-1.300)

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Units
TOTAL DEVICE Storage Temperature Range	T_{STG}	-55 to 150	°C
Ambient Operating Temperature Range	T_{OPR}	-40 to 100	°C
Lead Soldering Temperature	T_{SOL}	260 for 10 sec	°C
Junction Temperature	T_J	125	°C
EMITTER Forward Current - Continuous	I_F	100	mA
Forward Current - Peak (t_{on} = 10µs, δ = 0.01)	I_F(pk)	3	A
Reverse Voltage	V_R	6	V
Total Power Dissipation @ T_A = 25°C	P_D	200	mW
Derate Linearly From 25°C		2.0	mW/°C
DETECTOR Collector Current-Continuous	I_C	100	mA
Emitter-Collector Voltage	V_{ECO}	7	V
Collector-Emitter Voltage	V_{CEO}	70	V
Collector-Base Voltage	V_{CBO}	70	V
Total Power Dissipation @ T_A = 25°C	P_D	200	mW
Derate Linearly From 25°C		2.0	mW/°C

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ELECTRICAL CHARACTERISTICS (T_A =25°C Unless otherwise specified)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
EMITTER	I_F = 10 mA	V_F	0.8	1.15	1.50	V
Input Forward Voltage	I_F = 10 mA, T_A = -55°C		0.9	—	1.70	
	I_F = 10 mA, T_A = 100°C		0.7	—	1.40	
Reverse Leakage Current	V_R = 6.0 V	I_R	—	—	10	µA
Input Capacitance	V_I = 0, f = 1 MHz	C_J	—	25	100	pF
DETECTOR Collector-Emitter Breakdown Voltage	I_C = 1.0 mA	BV_{CEO}	70	—	—	V
Collector-Base Breakdown Voltage	I_C = 0.1 mA	BV_{CBO}	70	—	—	V
Emitter-Collector Breakdown Voltage	I_E = 0.1 mA	BV_{ECO}	7	—	—	V
Emitter-Base Breakdown Voltage	I_E = 0.1 mA	BV_{EBO}	7	—	—	V
Collector-Emitter Dark Current	V_{CE} = 10 V, I_F = 0, T_A = 25°C	I_{CEO}	—	0.5	50	nA
	V_{CE} = 10 V, I_F = 0, T_A = 70°C		—	—	10	µA
Collector-Base Cut-off Current	I_F = 0, V_{CB} = 10 V	I_{CBO}	—	—	20	nA

ISOLATION CHARACTERISTICS

Characteristic	Test Conditions	Symbol	Min	Typ	Max	Units
Input-Output Isolation Voltage	DC Value, Time = 1 min.	V_{ISO}	5,656			V
	RMS Value, Time = 1 min.		4,000			
Isolation Resistance	V_{I-O} = ±500 VDC	R_{ISO}	1	10		TΩ
Isolation Capacitance	V = 0V, f = 1 MHz	C_{ISO}		0.3	0.5	pF
Output Capacitance	V_{CB} = 10 V, f = 1 MHz	C_O		4.5		pF

TRANSFER CHARACTERISTICS (T_A = 25°C Unless otherwise specified.)

DC Characteristics	Test Conditions	Symbol	Device	Min	Typ	Max	Units
Output/Input Current Transfer Ratio	I_F = 10 mA, V_{CE} = 10 V	CTR	CNW11AV-1	100		300	%
			CNW11AV-2	50			
			CNW11AV-3	20			
Collector-Emitter Saturation Voltage	I_F = 20 mA, I_C = 2 mA	$V_{CE(SAT)}$	All		0.1	0.4	V
Common Mode Rejection Ratio	I_C= 2mA,V_{CC}=5V, f=10kHz, R=1kV	CMRR	All		-60		dB
AC Characteristics	**Test Conditions**	**Symbol**	**Device**	**Min**	**Typ**	**Max**	**Units**
Saturated Switching Times Turn-On Time (fig. 2 & 3)	I_C= 2 mA, V_{CC}= 10V, R_L=100Ω	t_{on}	All		3	15	µs
Turn-Off Time (fig. 2 & 3)		t_{off}	All		2.5	15	µs

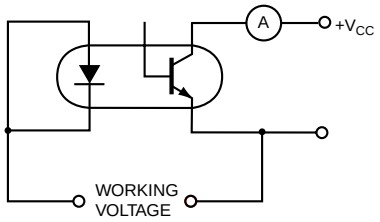


Fig. 1 Test Circuit

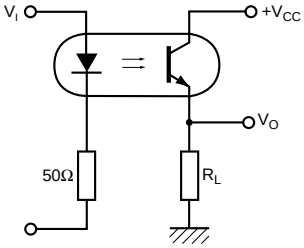


Fig. 2 Switching Circuit

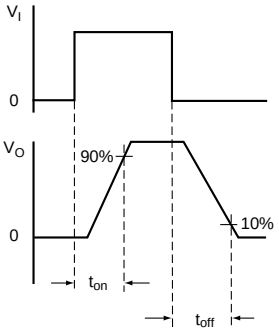


Fig. 3 Waveforms

Fig. 4 LED Forward Voltage vs. Forward Current

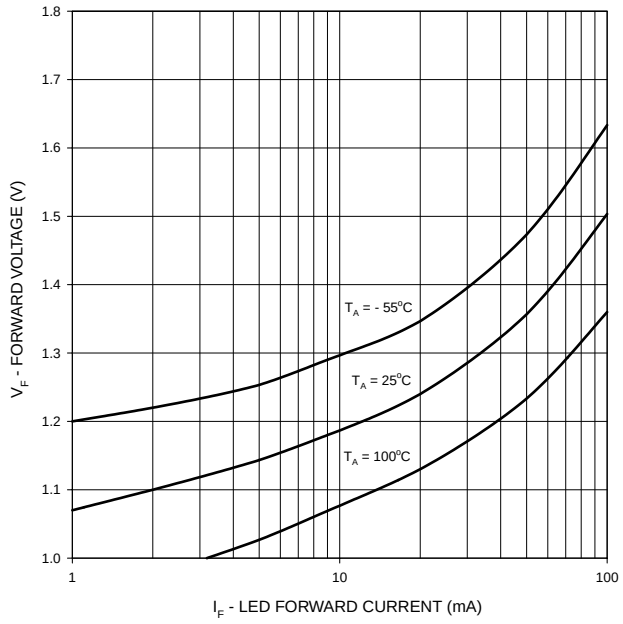


Fig. 5 Normalized CTR vs. Forward Current

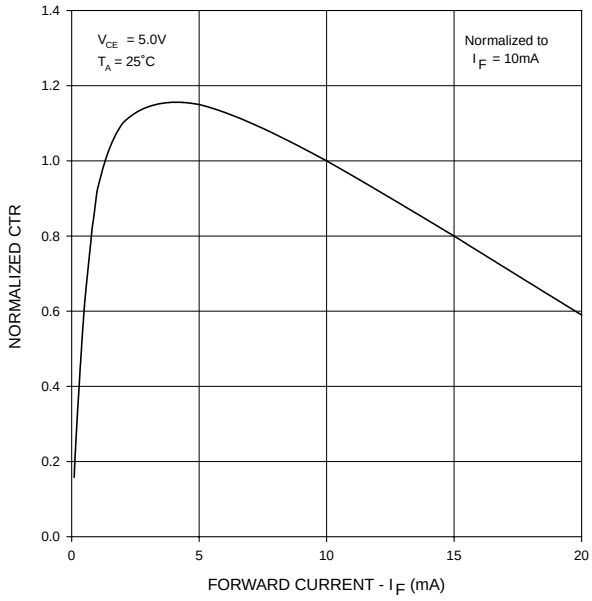


Fig. 6 Normalized CTR vs. Temperature

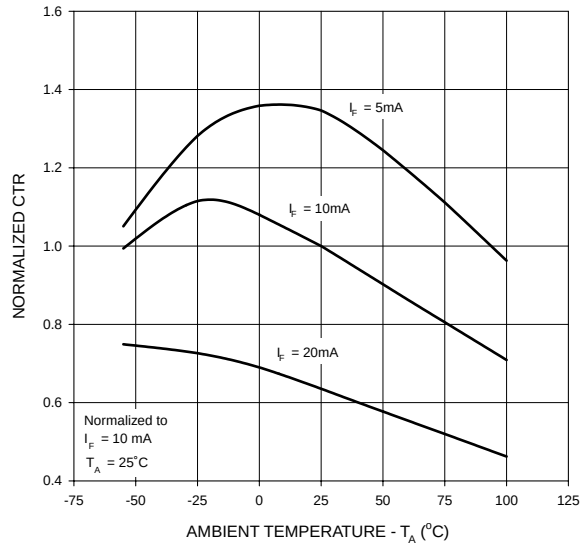


Fig. 7 CTR vs. RBE (Unsaturated)

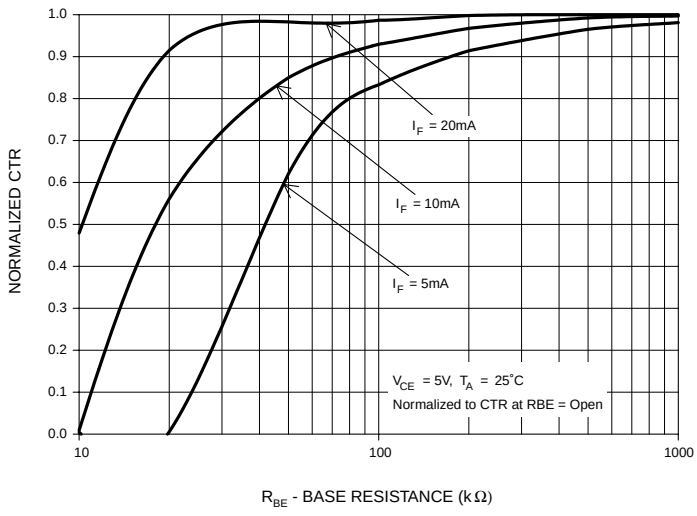


Fig. 8 CTR vs. RBE (Saturated)

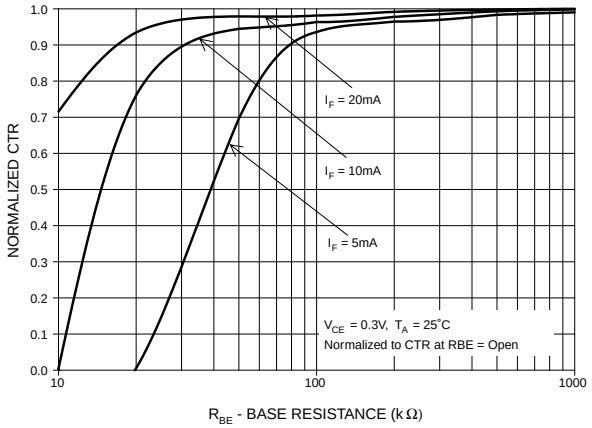


Fig. 9 Normalized t_{on} vs. R_{BE}

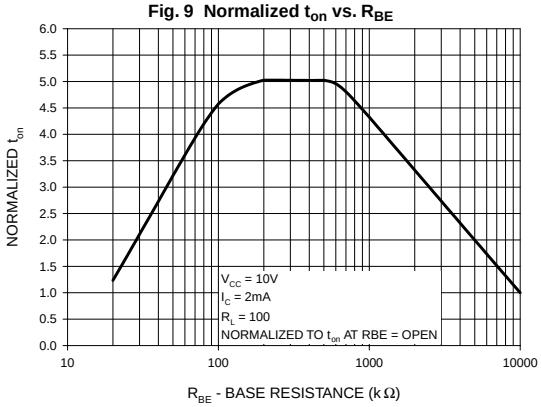


Fig. 10 Normalized t_{off} vs. R_{BE}

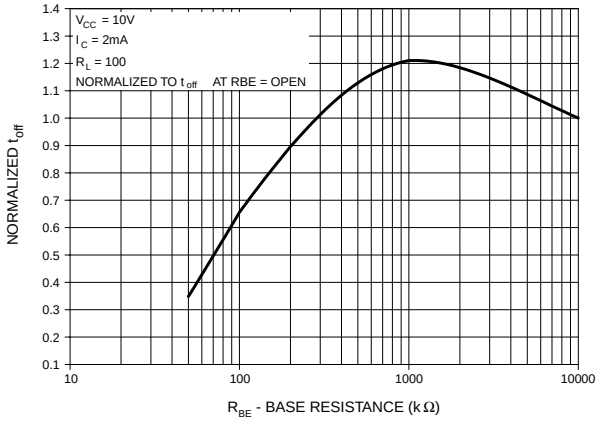


Fig. 11 Switching Speed vs. Load Resistor

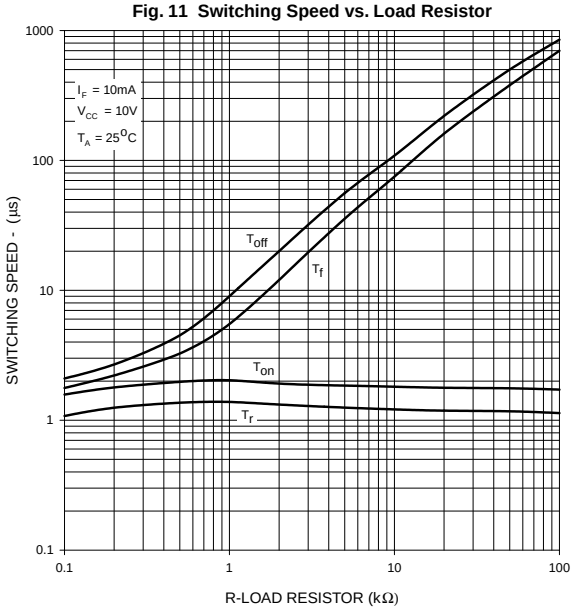


Fig. 12 Collector-Emitter Saturation Voltage vs Collector Current

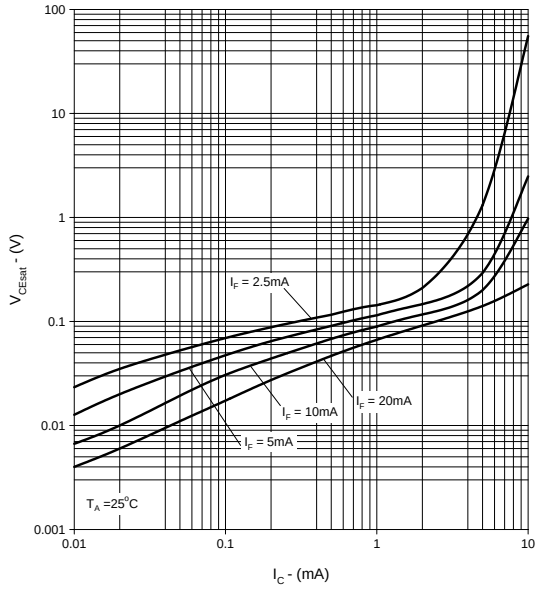
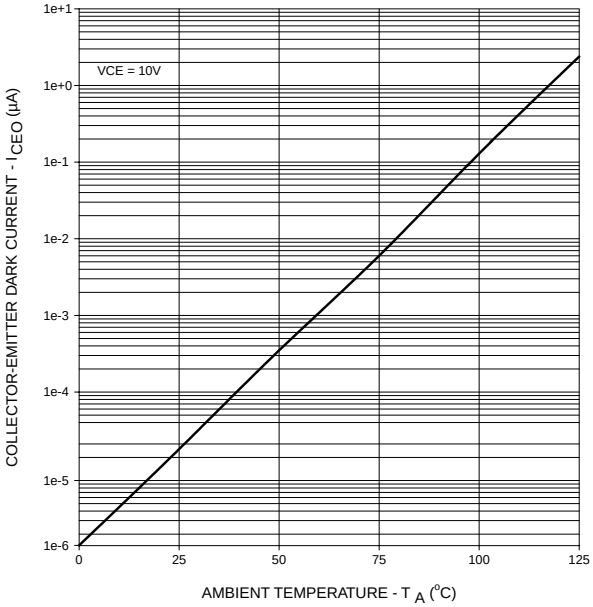


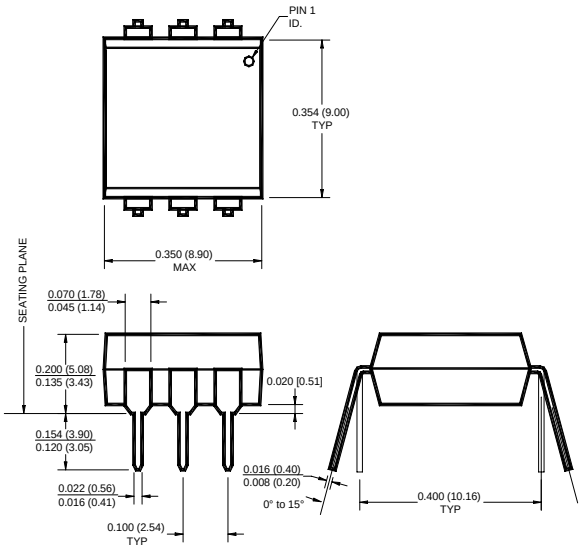
Fig. 13 Dark Current vs. Ambient Temperature



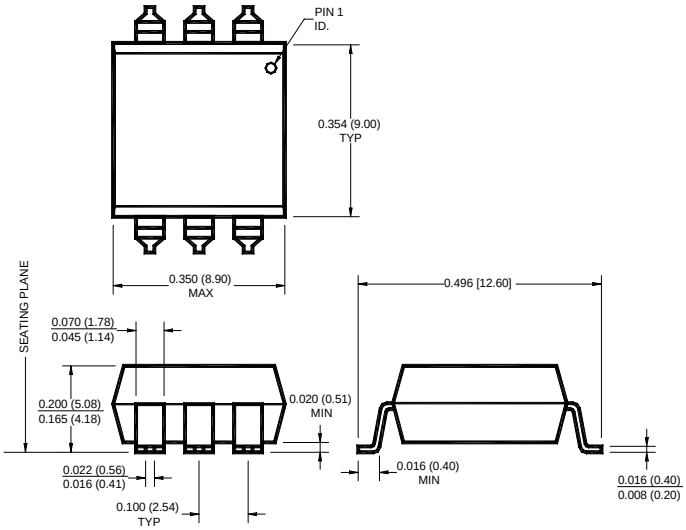
HIGH VOLTAGE 6-PIN PHOTOTRANSISTOR OPTOCOUPLERS

CNW11AV-1 CNW11AV-2 CNW11AV-3

Package Dimensions (Through Hole)



Package Dimensions (Surface Mount)



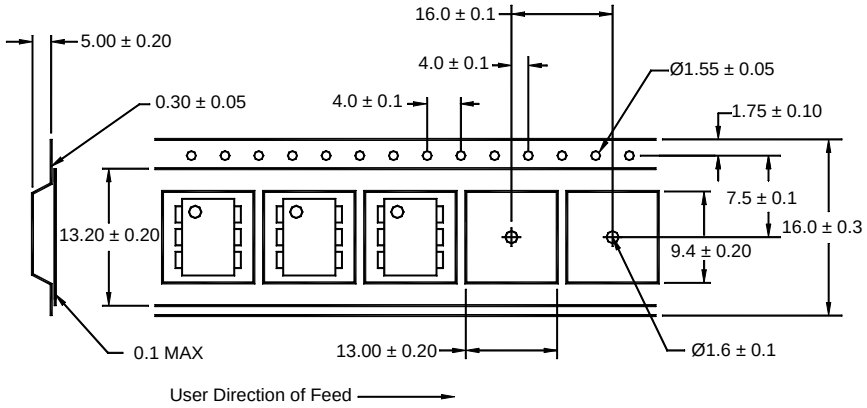
NOTE

All dimensions are in inches (millimeters)

ORDERING INFORMATION

Option	Order Entry Identifier	Description
S	.S	Surface Mount Lead Bend
SD	.SD	Surface Mount; Tape and reel
300	.300	VDE 0884

Carrier Tape Specifications (“D” Taping Orientation)



NOTE

All dimensions are in inches (millimeters)

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