

CNW11AV-1
CNW11AV-2
CNW11AV-3

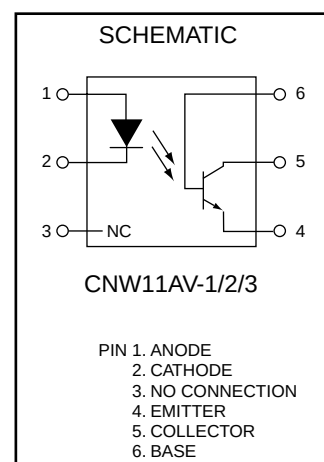
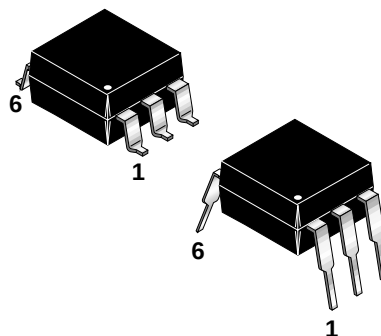
DESCRIPTION

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.

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 Of 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 Input Forward Voltage	I _F = 10 mA	V _F	0.8	1.15	1.50	V
	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

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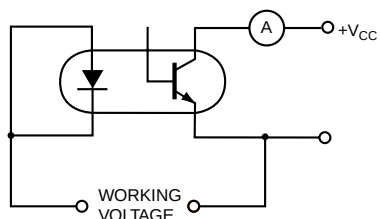


Fig. 1 Test Circuit

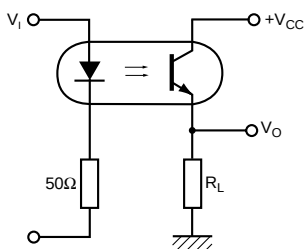


Fig. 2 Switching Circuit

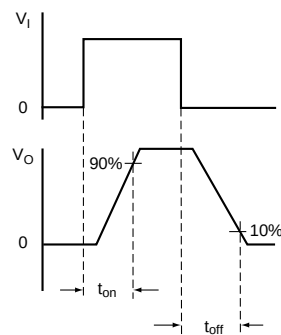


Fig. 3 Waveforms

Fig. 4 LED Forward Voltage vs. Forward Current

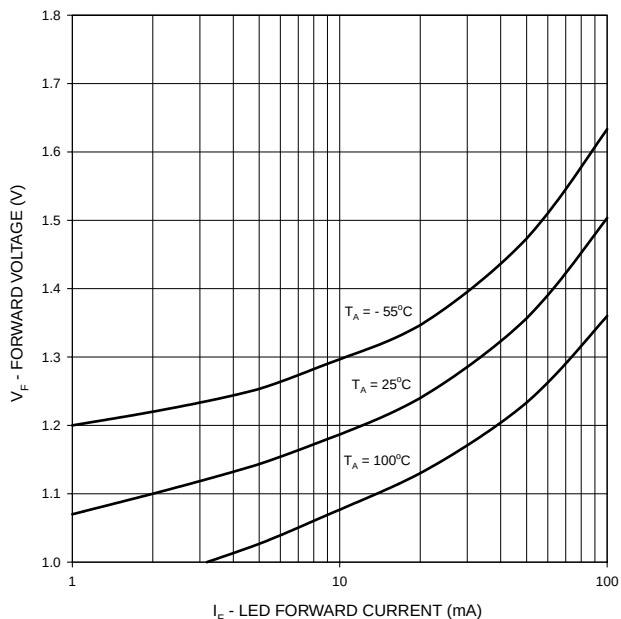


Fig. 5 Normalized CTR vs. Forward Current

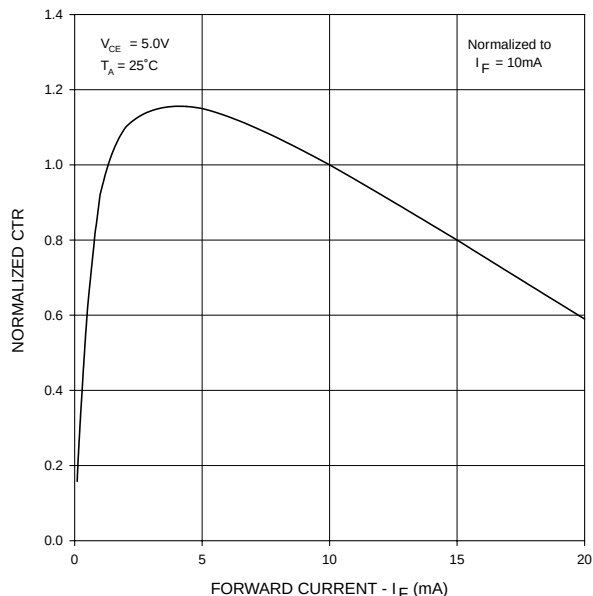


Fig. 6 Normalized CTR vs. Temperature

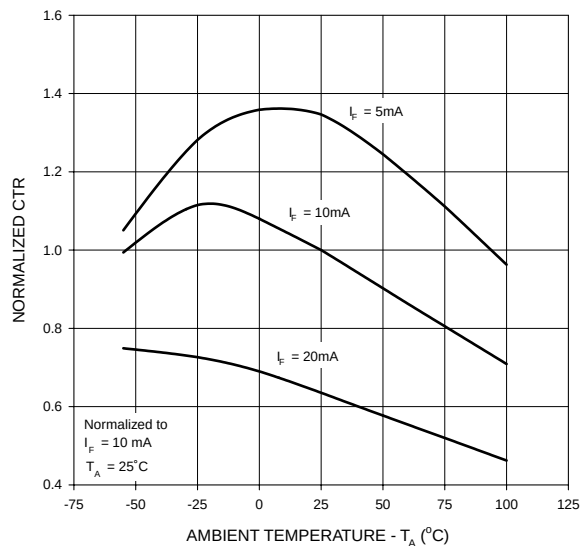
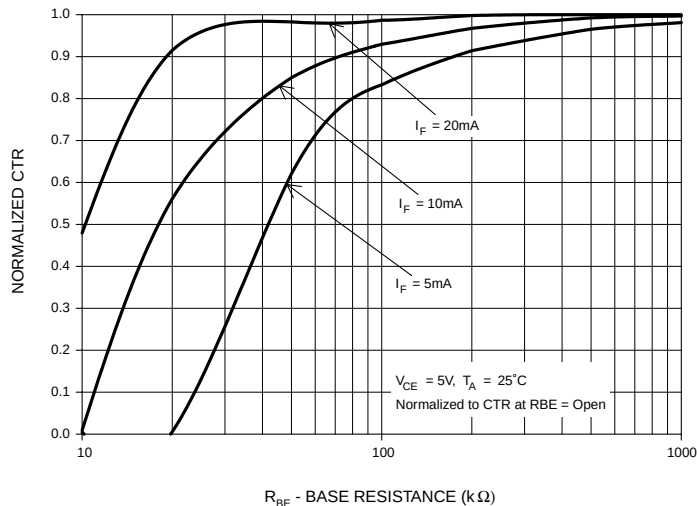


Fig. 7 CTR vs. RBE (Unsaturated)



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Fig. 8 CTR vs. R_{BE} (Saturated)

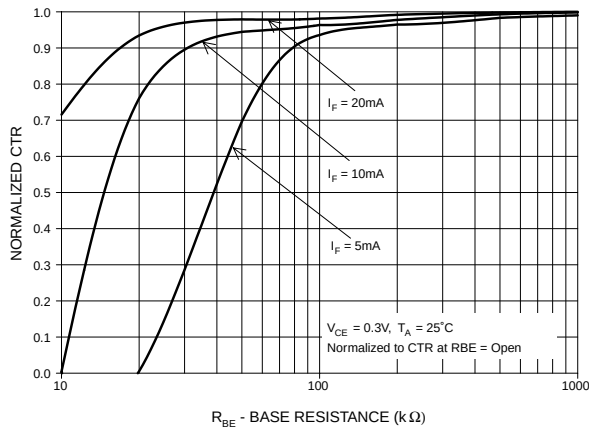


Fig. 9 Normalized t_{on} vs. R_{BE}

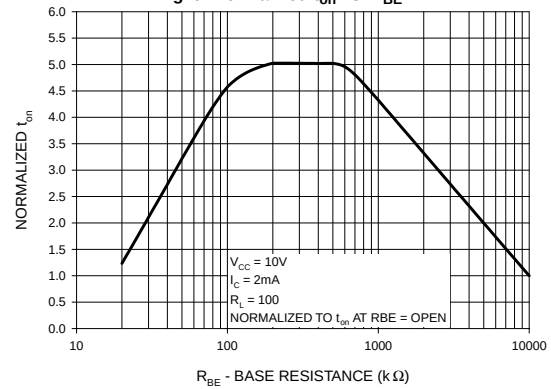


Fig. 10 Normalized t_{off} vs. R_{BE}

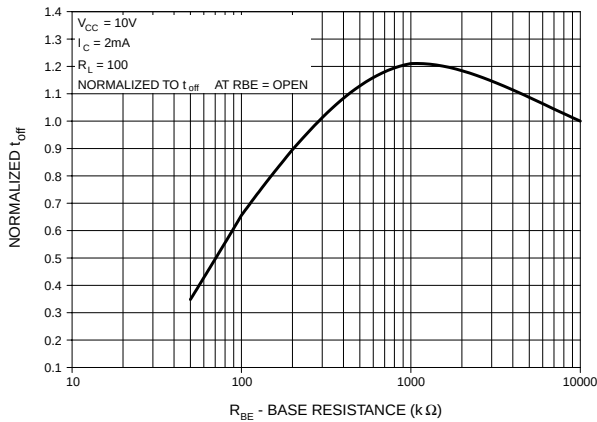


Fig. 11 Switching Speed vs. Load Resistor

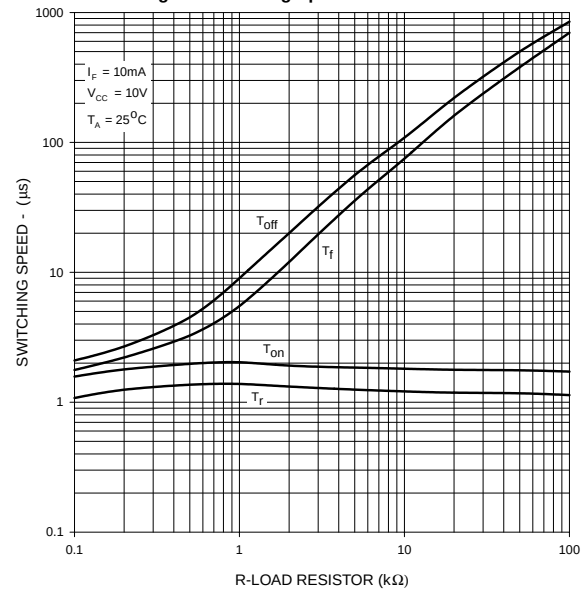


Fig. 12 Collector-Emitter Saturation Voltage vs. Collector Current

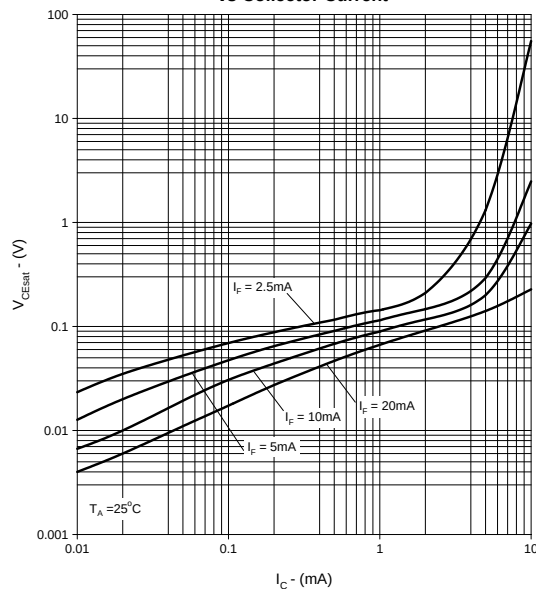
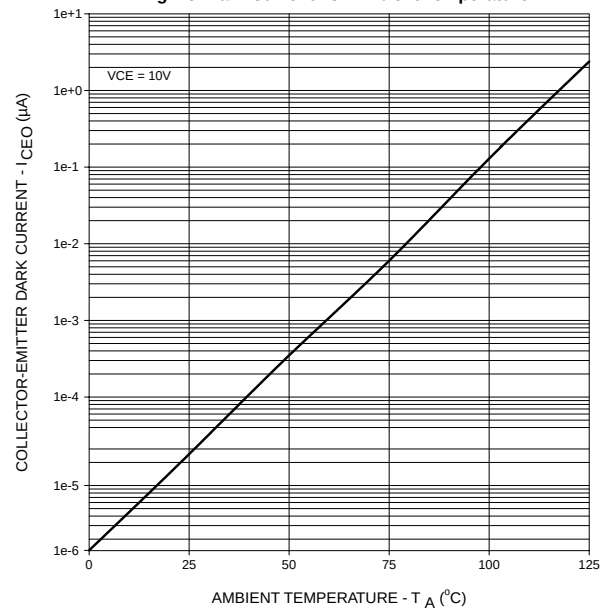


Fig. 13 Dark Current vs. Ambient Temperature

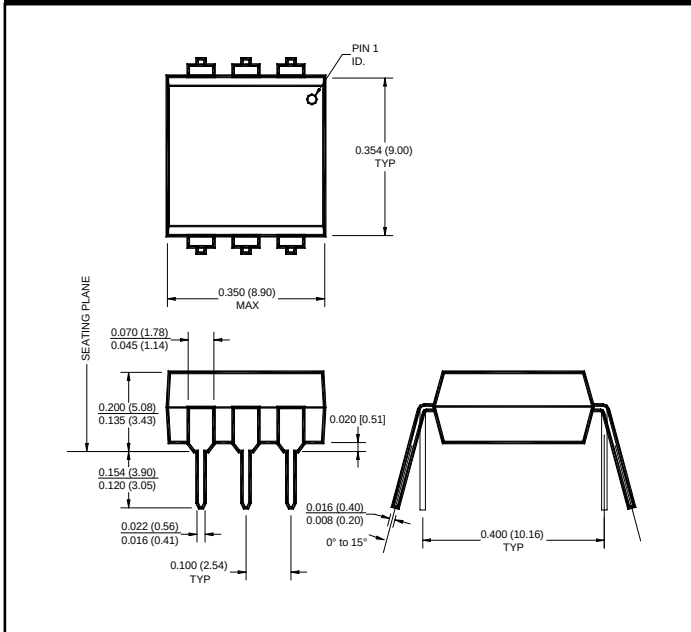


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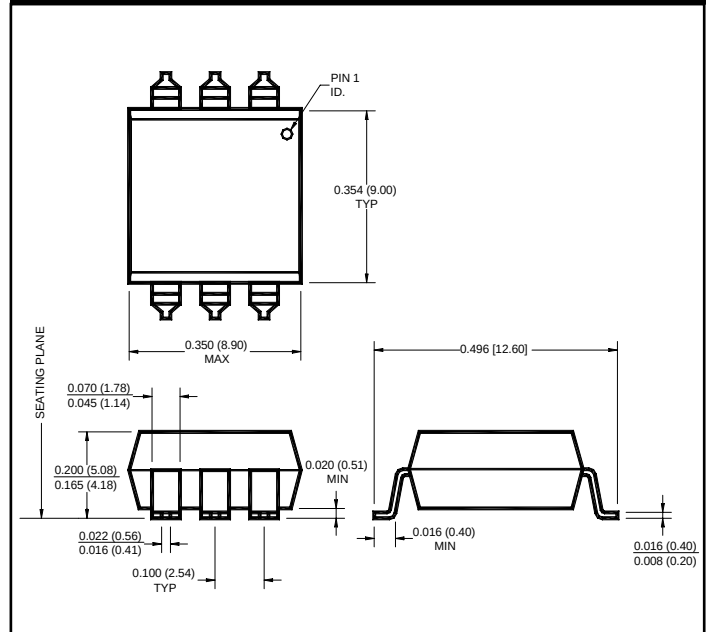
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Package Dimensions (Through Hole)



Package Dimensions (Surface Mount)



NOTE

All dimensions are in inches (millimeters)

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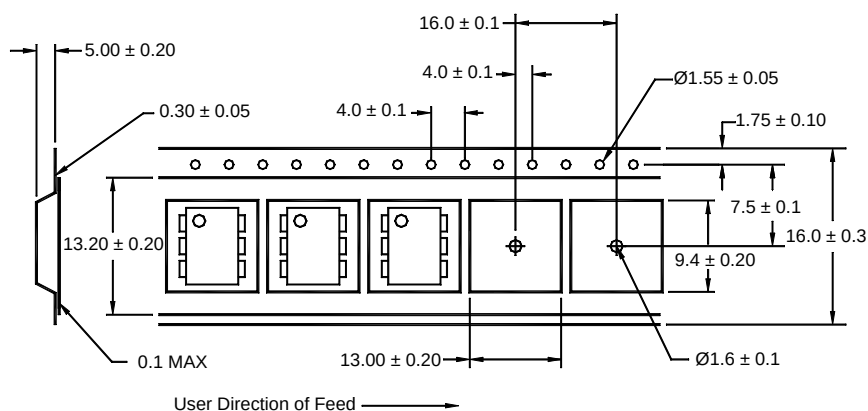
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ORDERING INFORMATION

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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