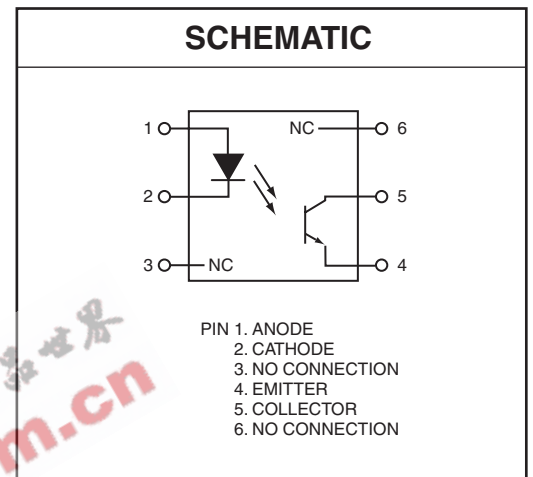
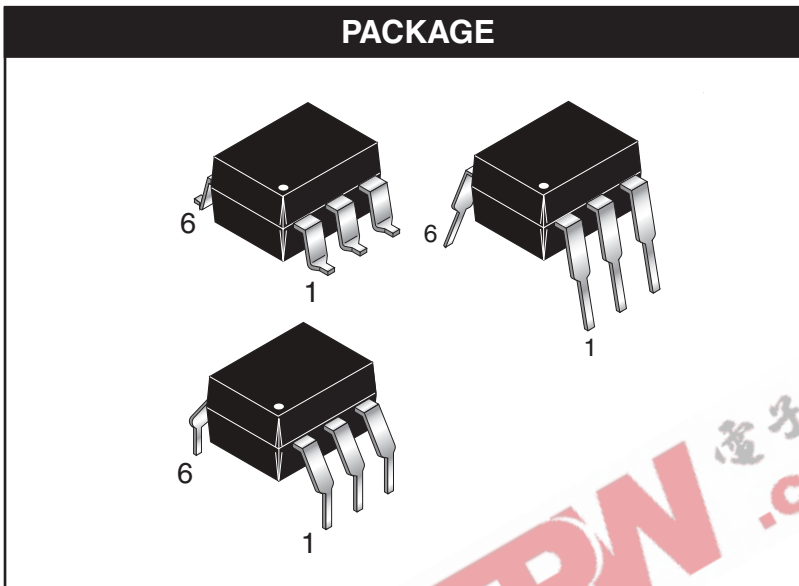


6-PIN DIP OPTOCOUPLERS FOR POWER SUPPLY APPLICATIONS (NO BASE CONNECTION)

MOC8101	MOC8102	MOC8103	MOC8104
MOC8105	MOC8106	MOC8107	MOC8108
CNY17F-1	CNY17F-2	CNY17F-3	CNY17F-4



FEATURES

The MOC810X and CNY17F-X devices consist of a gallium arsenide LED optically coupled to a silicon phototransistor in a dual-in-line package.

- Closely Matched Current Transfer Ratio (CTR) Minimizes Unit-to-Unit Variation
- Narrow (CTR) Windows that Translate to a Narrow and Predictable Open Loop Gain Window
- Very Low Coupled Capacitance along with No Chip to Pin 6 Base Connection for Minimum Noise Susceptibility
- **To order devices that are tested and marked per VDE 0884 requirements, the suffix “.300” must be included at the end of part number. e.g. MOC8101.300 VDE 0884 is a test option.**

APPLICATIONS

- Switchmode Power Supplies (Feedback Control)
- AC Line/Digital Logic Isolation
- Interfacing and coupling systems of different potentials and impedances

**6-PIN DIP OPTOCOUPLEDERS FOR
POWER SUPPLY APPLICATIONS
(NO BASE CONNECTION)**

MOC8101	MOC8102	MOC8103	MOC8104
MOC8105	MOC8106	MOC8107	MOC8108
CNY17F-1	CNY17F-2	CNY17F-3	CNY17F-4

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless otherwise specified)

Parameter	Symbol	Value	Unit
INPUT LED			
Forward Current - Continuous	I_F	100	mA
Forward Current - Peak ($PW = 1\mu\text{s}, 300\text{pps}$)	$I_F(\text{pk})$	1	A
Reverse Voltage	V_R	6	Volts
LED Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	150 2.0	mW mW/ $^\circ\text{C}$
OUTPUT TRANSISTOR			
Collector-Emitter Voltage MOC8106/7/8, CNY17F-1/2/3/4 MOC8101/2/3/4/5	V_{CEO}	70 30	Volts
Emitter-Collector Voltage	V_{ECO}	7	Volts
Detector Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	150 2.0	mW mW/ $^\circ\text{C}$
TOTAL DEVICE			
Input-Output Isolation Voltage ($f = 60\text{ Hz}, t = 1\text{ min.}$)	V_{ISO}	5300	Vac(rms)
Total Device Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	250 3.3	mW mW/ $^\circ\text{C}$
Ambient Operating Temperature Range	T_{OPR}	-55 to +100	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$
Lead Soldering Temperature (1/16" from case, 10 sec. duration)	T_{SOL}	260	$^\circ\text{C}$

**6-PIN DIP OPTOCOUPLEDERS FOR
POWER SUPPLY APPLICATIONS
(NO BASE CONNECTION)**

MOC8101	MOC8102	MOC8103	MOC8104
MOC8105	MOC8106	MOC8107	MOC8108
CNY17F-1	CNY17F-2	CNY17F-3	CNY17F-4

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise specified)⁽¹⁾

Characteristic	Symbol	Min	Typ**	Max	Unit	
INPUT LED						
Forward Voltage	V_F	—	$(I_F = 60 \text{ mA})$ CNY17F-X	1.40	V	
			$(I_F = 10 \text{ mA})$ MOC810X	1.18		1.5
Reverse Leakage Current ($V_R = 5.0 \text{ V}$)	I_R	—	0.001	10	μA	
Capacitance	C	—	18	—	pF	
OUTPUT TRANSISTOR						
Collector-Emitter Dark Current	I_{CE01}	—	$(V_{CE} = 10 \text{ V}, T_A = 25^\circ\text{C})$	1.0	nA	
			$(V_{CE} = 10 \text{ V}, T_A = 100^\circ\text{C})$	I_{CE02}	1.0	μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30	MOC8101/2/3/4/5 $(I_C = 1.0 \text{ mA})$	100	V	
			MOC8106/7/8, CNY17F-1/2/3/4 $(I_C = 1.0 \text{ mA})$	70		100
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	7.0	10	—	V	
Collector-Emitter Capacitance	C_{CE}	—	8	—	pF	
COUPLED						
Output Collector Current ($I_F = 10 \text{ mA}, V_{CE} = 10 \text{ V}$)	MOC8101	(CTR) ⁽²⁾	50	—	80	%
	MOC8102		73	—	117	
	MOC8103		108	—	173	
	MOC8104		160	—	256	
	MOC8105		65	—	133	
	MOC8106		50	—	150	
	MOC8107		100	—	300	
	MOC8108		250	—	600	
(I _F = 10 mA, V _{CE} = 5 V)	CNY17F-1	40	—	80		
	CNY17F-2	63	—	125		
	CNY17F-3	100	—	200		
	CNY17F-4	160	—	320		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	0.4	V	
CNY17F-1/2/3/4 $(I_C = 2.5 \text{ mA}, I_F = 10 \text{ mA})$						
	MOC8101/2/3/4/5/6/7/8 $(I_C = 500 \mu\text{A}, I_F = 5.0 \text{ mA})$					
Isolation Voltage	V_{ISO}	5300	—	—	Vac(rms)	
Isolation Resistance	R_{ISO}	10^{11}	—	—	Ω	
Isolation Capacitance	C_{ISO}	—	0.5	—	pF	

** All typicals at $T_A = 25^\circ\text{C}$

6-PIN DIP OPTOCOUPLEDERS FOR POWER SUPPLY APPLICATIONS (NO BASE CONNECTION)

MOC8101	MOC8102	MOC8103	MOC8104
MOC8105	MOC8106	MOC8107	MOC8108
CNY17F-1	CNY17F-2	CNY17F-3	CNY17F-4

TRANSFER CHARACTERISTICS (T _A = 25°C Unless otherwise specified)								
AC Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Unit		
NON-SATURATED SWITCHING TIME								
Turn-on Time CNY17F-1/2/3/4 Only	(R _L = 100 Ω, I _C = 2 mA)	t _{on}	—	2	10	μs		
Turn-off Time CNY17F-1/2/3/4 Only	(V _{CC} = 10 V)	t _{off}	—	3	10			
Turn-On Time	MOC8101-5 MOC8106-8 (I _C = 2.0 mA, V _{CC} = 10 V, R _L = 100 Ω) ⁽³⁾	t _{on}	—	2	20	μs		
Turn-Off Time	MOC8101-5 MOC8106-8 (I _C = 2.0 mA, V _{CC} = 10 V, R _L = 100 Ω) ⁽³⁾	t _{off}	—	3	20			
Rise Time	All Devices (I _C = 2.0 mA, V _{CC} = 10 V, R _L = 100 Ω) ⁽³⁾	t _r	—	1	—	μs		
Fall Time	All Devices (I _C = 2.0 mA, V _{CC} = 10 V, R _L = 100 Ω) ⁽³⁾	t _f	—	2	—			
SATURATED SWITCHING TIMES								
Turn-on Time	CNY17F-1 (I _F = 20 mA, V _{CE} = 0.4 V)	t _{on}	—	—	5.5	μs		
	CNY17F-2 CNY17F-3 CNY17F-4 (I _F = 10 mA, V _{CE} = 0.4 V)		—	—	8.0			
Rise Time	CNY17F-1 (I _F = 20 mA, V _{CE} = 0.4 V)		t _r	—	—		4.0	μs
	CNY17F-2 CNY17F-3 CNY17F-4 (I _F = 20 mA, V _{CE} = 0.4 V)			—	—		—	
Turn-off Time	CNY17F-1 (I _F = 20 mA, V _{CE} = 0.4 V)	t _{off}		—	—	34	μs	
	CNY17F-2 CNY17F-3 CNY17F-4 (I _F = 10 mA, V _{CE} = 0.4 V)			—	—	39		
Fall Time	CNY17F-1 (I _F = 20 mA, V _{CE} = 0.4 V)		t _f	—	—	20		μs
	CNY17F-2 CNY17F-3 CNY17F-4 (I _F = 10 mA, V _{CE} = 0.4 V)			—	—	24		

** All typicals at T_A = 25°C

NOTES:

1. Always design to the specified minimum/maximum electrical limits (where applicable).
2. Current Transfer Ratio (CTR) = I_C/I_F x 100%.
3. For test circuit setup and waveforms, refer to Figure 11.
4. For this test, Pins 1 and 2 are common, and Pins 4 and 5 are common.

MOC8101	MOC8102	MOC8103	MOC8104
MOC8105	MOC8106	MOC8107	MOC8108
CNY17F-1	CNY17F-2	CNY17F-3	CNY17F-4

TYPICAL PERFORMANCE CURVES

Fig. 1 LED Forward Voltage vs. Forward Current

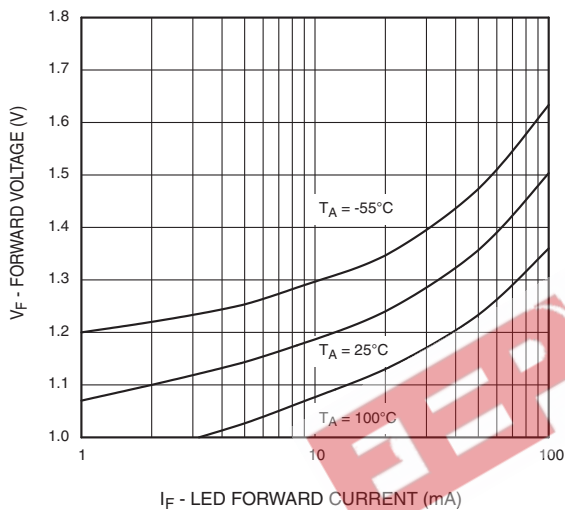


Fig. 2 Normalized CTR vs. Forward Current

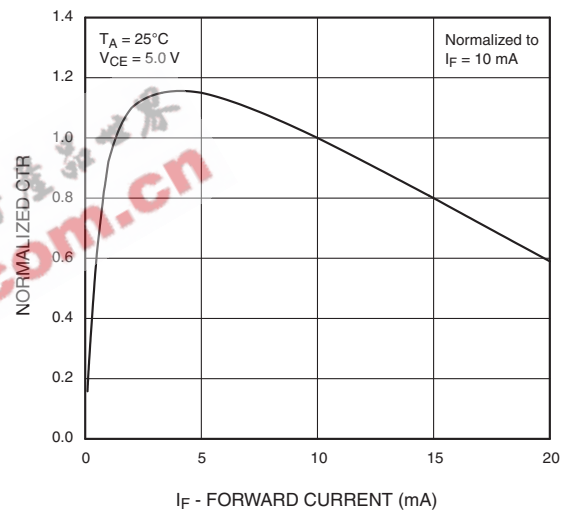


Fig. 3 Normalized CTR vs. Ambient Temperature

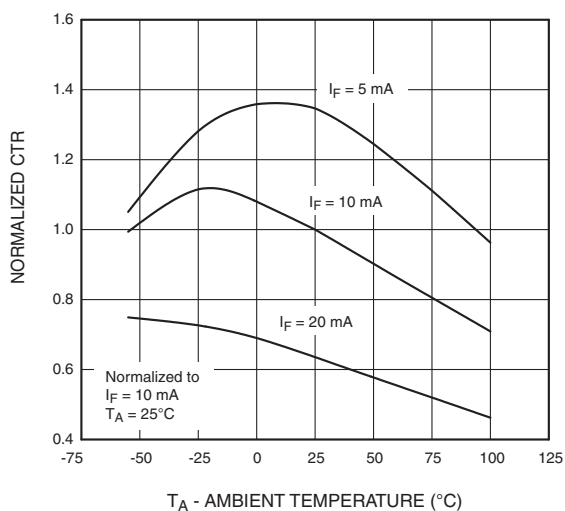
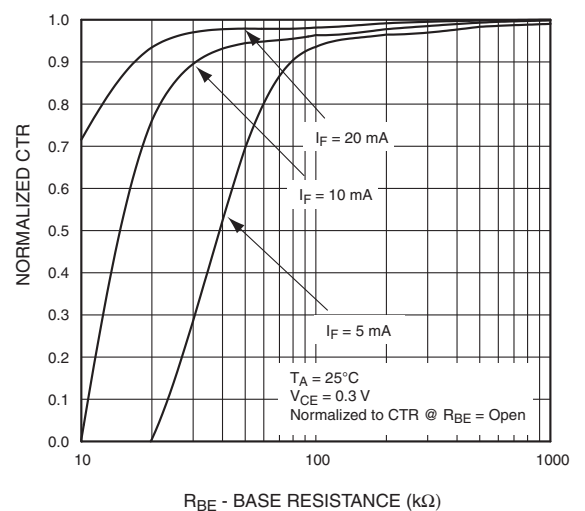


Fig. 4 CTR vs. R_{BE} (Saturated)



6-PIN DIP OPTOCOUPPLERS FOR POWER SUPPLY APPLICATIONS (NO BASE CONNECTION)

MOC8101	MOC8102	MOC8103	MOC8104
MOC8105	MOC8106	MOC8107	MOC8108
CNY17F-1	CNY17F-2	CNY17F-3	CNY17F-4

TYPICAL PERFORMANCE CURVES (continued)

Fig. 5 CTR vs. R_{BE} (Unsaturated)

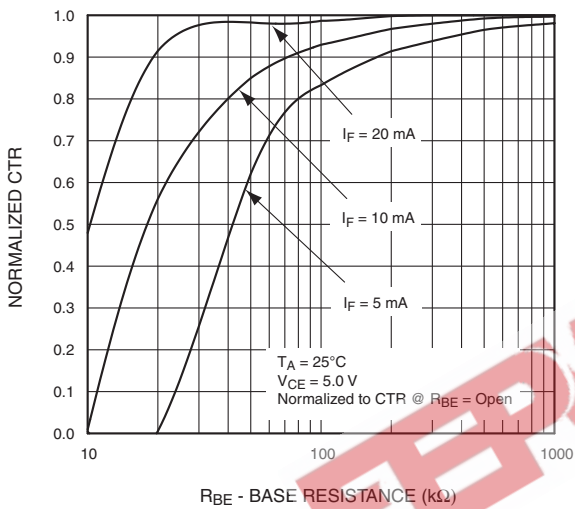


Fig. 6 Collector-Emitter Saturation Voltage vs. Collector Current

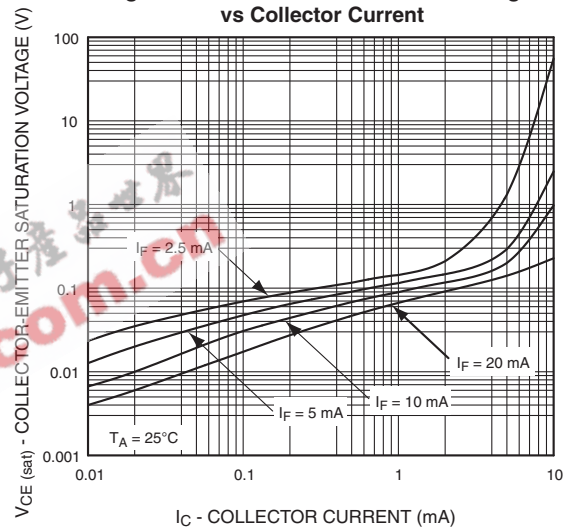


Fig. 7 Normalized t_{on} vs. R_{BE}

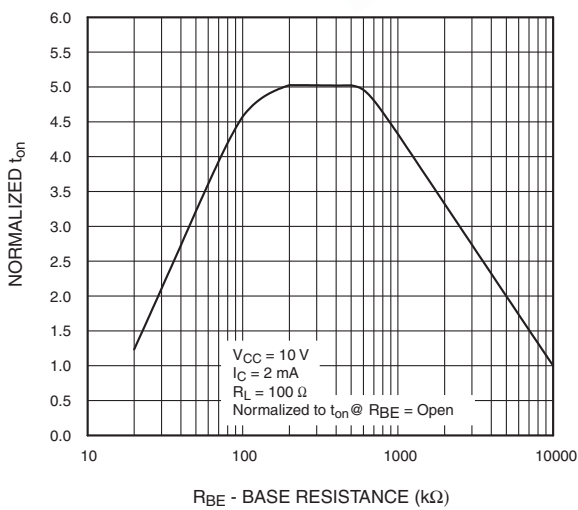
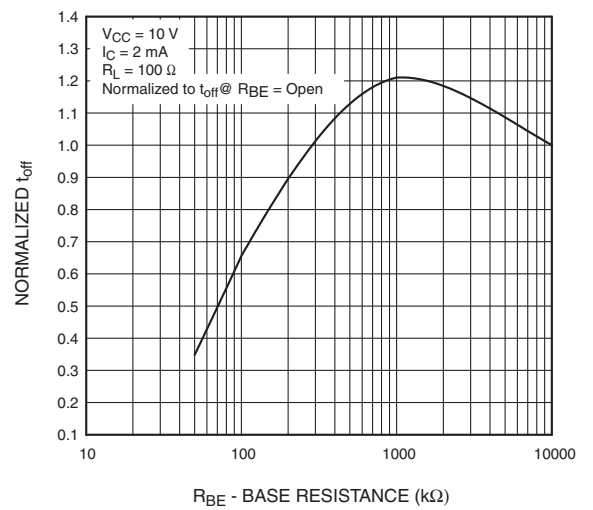


Fig. 8 Normalized t_{off} vs. R_{BE}



6-PIN DIP OPTOCOUPLEDERS FOR POWER SUPPLY APPLICATIONS (NO BASE CONNECTION)

MOC8101	MOC8102	MOC8103	MOC8104
MOC8105	MOC8106	MOC8107	MOC8108
CNY17F-1	CNY17F-2	CNY17F-3	CNY17F-4

TYPICAL PERFORMANCE CURVES (continued)

Fig. 9 Switching Speed vs. Load Resistor

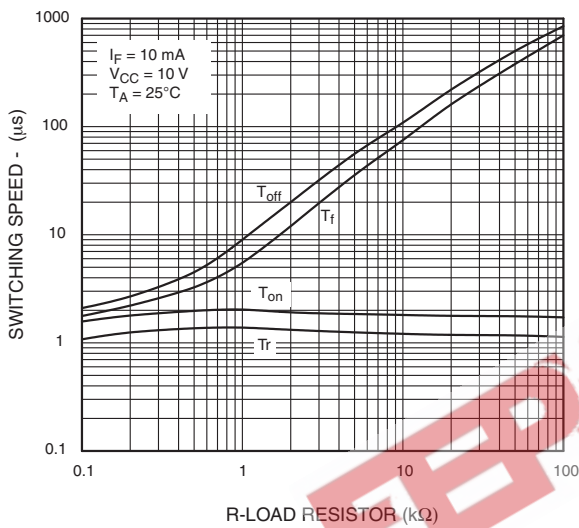
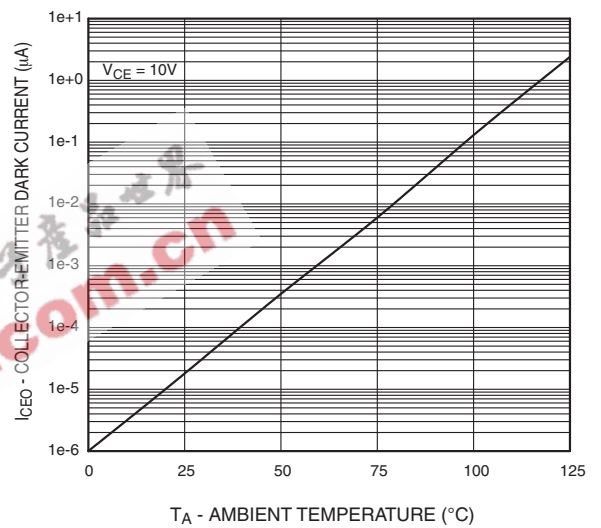


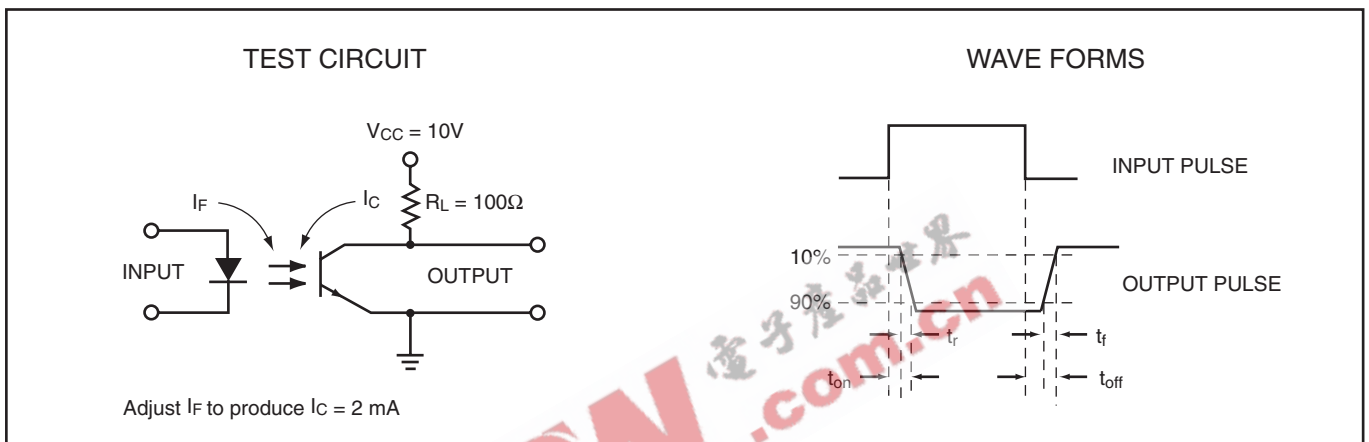
Fig. 10 Dark current vs. Ambient Temperature.



6-PIN DIP OPTOCOUPLERS FOR POWER SUPPLY APPLICATIONS (NO BASE CONNECTION)

MOC8101	MOC8102	MOC8103	MOC8104
MOC8105	MOC8106	MOC8107	MOC8108
CNY17F-1	CNY17F-2	CNY17F-3	CNY17F-4

Figure 11. Switching Time Test Circuit and Waveforms



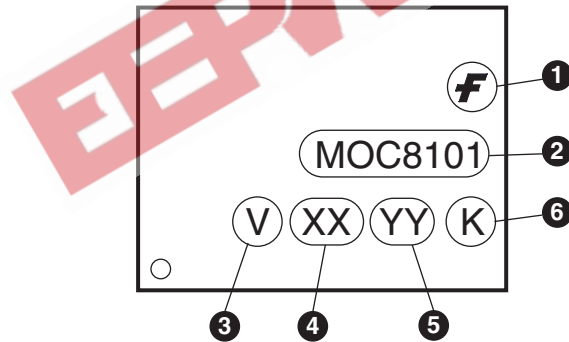
6-PIN DIP OPTOCOUPPLERS FOR POWER SUPPLY APPLICATIONS (NO BASE CONNECTION)

MOC8101	MOC8102	MOC8103	MOC8104
MOC8105	MOC8106	MOC8107	MOC8108
CNY17F-1	CNY17F-2	CNY17F-3	CNY17F-4

ORDERING INFORMATION

Option	Order Entry Identifier	Description
S	.S	Surface Mount Lead Bend
SD	.SD	Surface Mount; Tape and Reel
W	.W	0.4" Lead Spacing
300	.300	VDE 0884
300W	.300W	VDE 0884, 0.4" Lead Spacing
3S	.3S	VDE 0884, Surface Mount
3SD	.3SD	VDE 0884, Surface Mount, Tape and Reel

MARKING INFORMATION

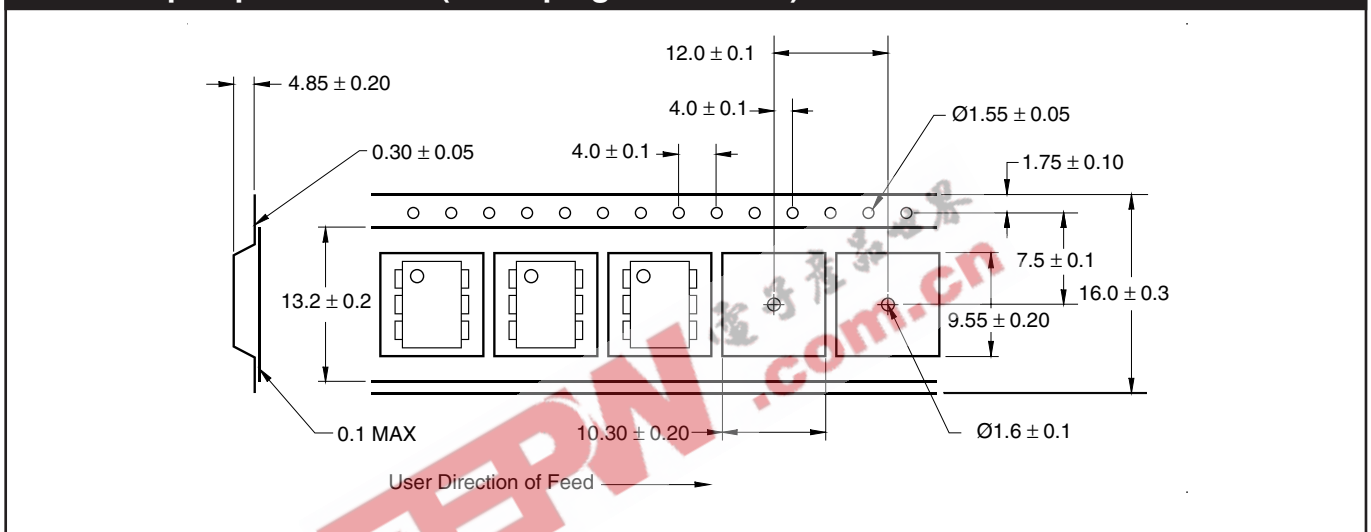


Definitions	
1	Fairchild logo
2	Device number
3	VDE mark (Note: Only appears on parts ordered with VDE option – See order entry table)
4	Two digit year code, e.g., '03'
5	Two digit work week ranging from '01' to '53'
6	Assembly package code

**6-PIN DIP OPTOCOUPLEDERS FOR
POWER SUPPLY APPLICATIONS
(NO BASE CONNECTION)**

MOC8101	MOC8102	MOC8103	MOC8104
MOC8105	MOC8106	MOC8107	MOC8108
CNY17F-1	CNY17F-2	CNY17F-3	CNY17F-4

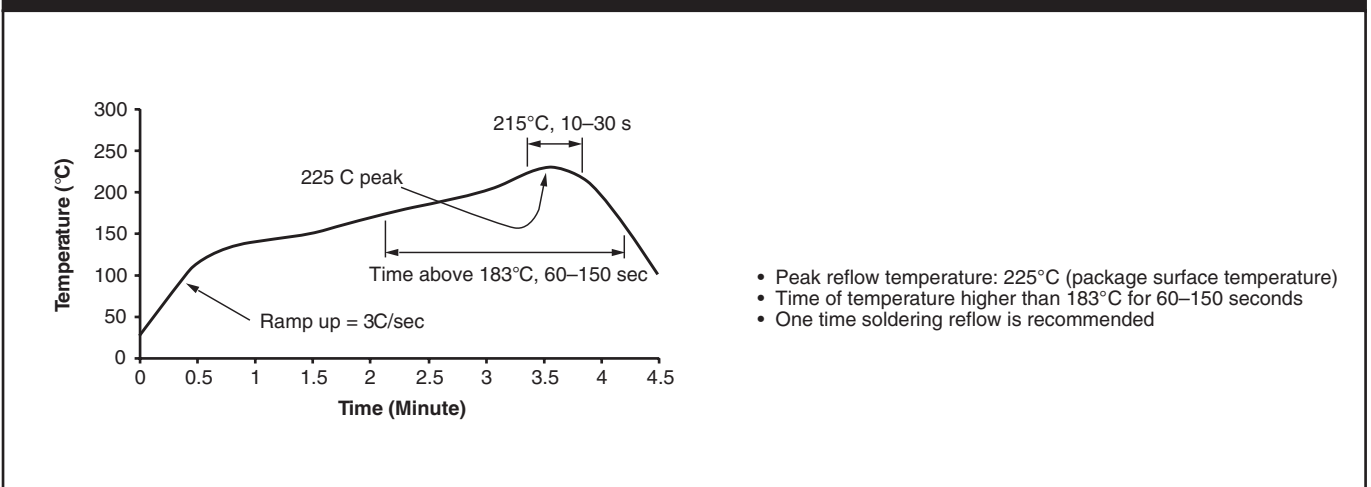
Carrier Tape Specifications ("D" Taping Orientation)



NOTE

All dimensions are in inches (millimeters)

Reflow Profile (Black Package, No Suffix)



**6-PIN DIP OPTOCOUPLEDERS FOR
POWER SUPPLY APPLICATIONS
(NO BASE CONNECTION)**

MOC8101	MOC8102	MOC8103	MOC8104
MOC8105	MOC8106	MOC8107	MOC8108
CNY17F-1	CNY17F-2	CNY17F-3	CNY17F-4

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

