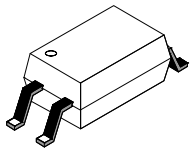
AC Input, Half Pitch Mini-Flat Package 4-Pin Optocoupler

HMHAA280



MPF4
CASE 100AL

Description

The HMHAA280 series consists of two gallium arsenide infrared emitting diodes, connected in inverse parallel, driving a single silicon phototransistor in a compact 4−pin mini−flat package. The lead pitch is 1.27 mm.

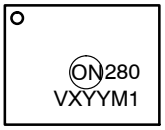
Features

- Compact 4−pin Package (2.4 mm Maximum Standoff Height)
- Half Pitch Leads for Optimum Board Space Savings
- Current Transfer Ratio: 50–600%
- Available in Tape and Reel Quantities of 2500
- CSA (File #1201524), UL (File #E90700) and VDE (File #136480) Certified
- This is a Pb−Free Device

Applications

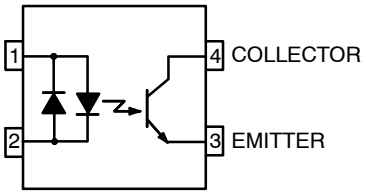
- AC Line Monitor
- Unknown Polarity DC Sensor
- Telephone Line Receiver

MARKING DIAGRAM



ON	= **onsemi** Logo
280	= Device Number
V	= VDE mark (Note: Only appears on parts ordered with VDE option − See order entry table)
X	= One−Digit Year Code
YY	= Digit Work Week, Ranging from “01” to “53”
M1	= Assembly Package Code

PIN CONNECTIONS



ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

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ABSOLUTE MAXIMUM RATINGS (T_A = 25°C, unless otherwise noted)

Symbol	Parameter	Value	Unit
TOTAL PACKAGE			
T_{STG}	Storage Temperature	−55 to + 125	°C
T_{OPR}	Operating Temperature	−55 to + 100	°C
EMITTER			
$I_{F\ (avg)}$	Continuous Forward Current	50	mA
$I_{F\ (pk)}$	Peak Forward Current (1μs pulse, 300 pps.)	1	A
V_R	Reverse Input Voltage	6	V
P_D	Power Dissipation Derate Linearly (above 25°C)	60 0.6	mW mW/°C
DETECTOR			
	Continuous Collector Current	50	mA
P_D	Power Dissipation Derate Linearly (above 25°C)	150 1.5	mW mW/°C
V_{CEO}	Collector−Emitter Voltage	80	V
V_{ECO}	Emitter−Collector Voltage	7	V

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
INDIVIDUAL COMPONENT CHARACTERISTICS **Emitter**						
V_F	Forward Voltage	I_F = ±5 mA	–	–	1.4	V
I_R	Reverse Current	V_R = 5 V	–	–	5	μA
Detector						
BV_{CEO}	Breakdown Voltage Collector to Emitter	I_C = 0.5 mA, I_F = 0	80	–	–	V
BV_{ECO}	Emitter to Collector	I_E = 100 μA, I_F = 0	7	–	–	
I_{CEO}	Collector Dark Current	V_{CE} = 80 V, I_F = 0	–	–	100	nA
C_{CE}	Capacitance	V_{CE} = 0 V, f = 1 MHz	–	10	–	pF
TRANSFER CHARACTERISTICS						
CTR	DC Current Transfer Ratio	I_F = ±5 mA, V_{CE} = 5 V	50	–	600	%
	CTR Symmetry	I_F = ±5 mA, V_{CE} = 5 V	0.33	–	3.0	
$V_{CE(SAT)}$	Saturation Voltage	I_F = ±8 mA, I_C = 2.4 mA	–	–	0.4	V
t_r	Rise Time (Non−Saturated)	I_C = 2 mA, V_{CE} = 5 V, R_L = 100 Ω	–	3	–	μs
t_f	Fall Time (Non−Saturated)	I_C = 2 mA, V_{CE} = 5 V, R_L = 100 Ω	–	3	–	μs
ISOLATION CHARACTERISTICS						
V_{ISO}	Steady State Isolation Voltage	1 Minute	3750	–	–	VRMS

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
*All typicals at T_A = 25°C.

TYPICAL PERFORMANCE CHARACTERISTICS

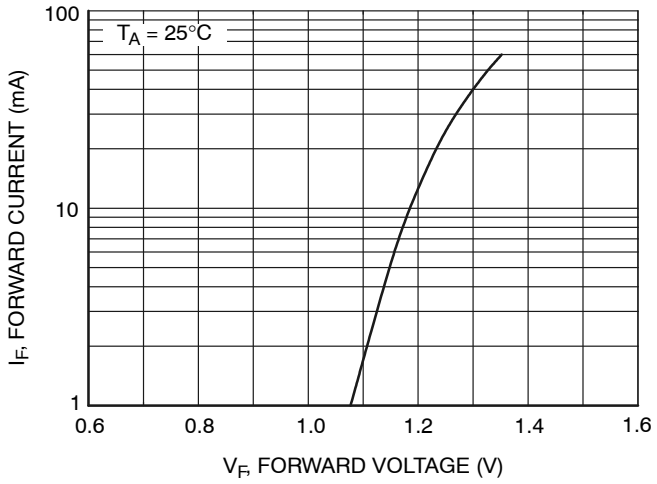


Figure 1. Forward Current vs. Forward Voltage

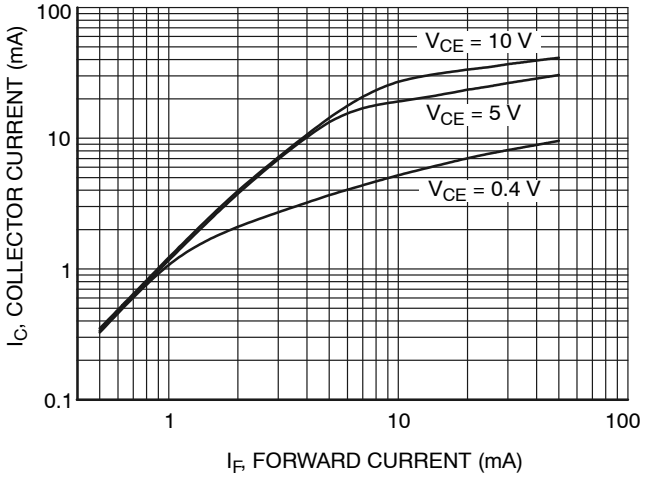


Figure 2. Collector Current vs. Forward Current

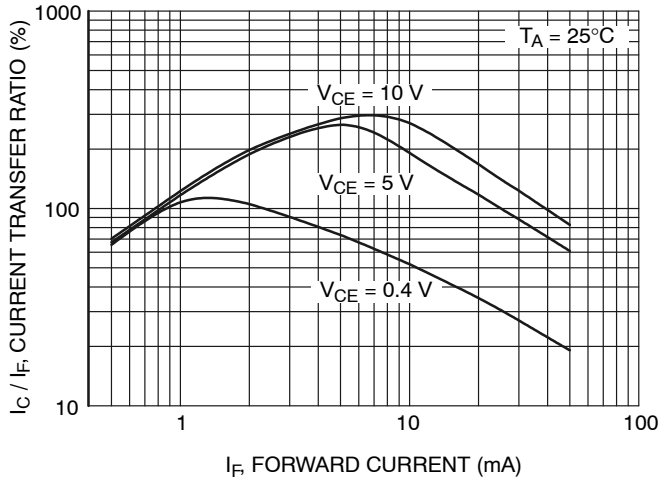


Figure 3. Current Transfer Ratio vs. Forward Current

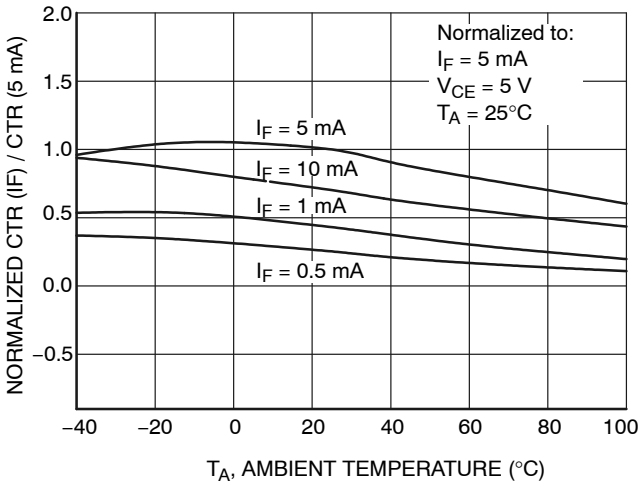


Figure 4. Normalized CTR vs. Temperature

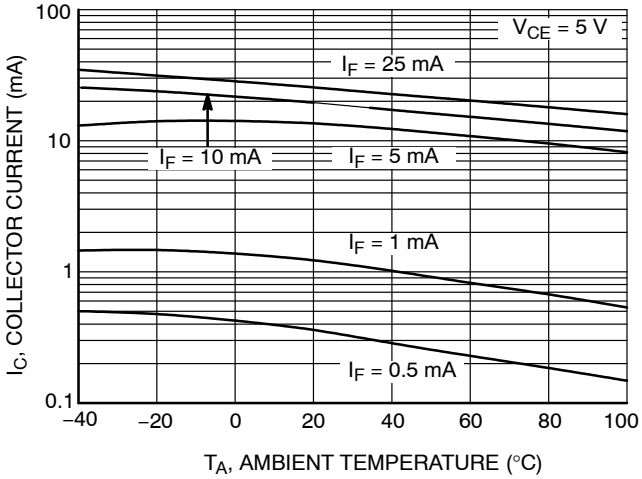


Figure 5. Collector Current vs. Temperature

TYPICAL PERFORMANCE CHARACTERISTICS (continued)

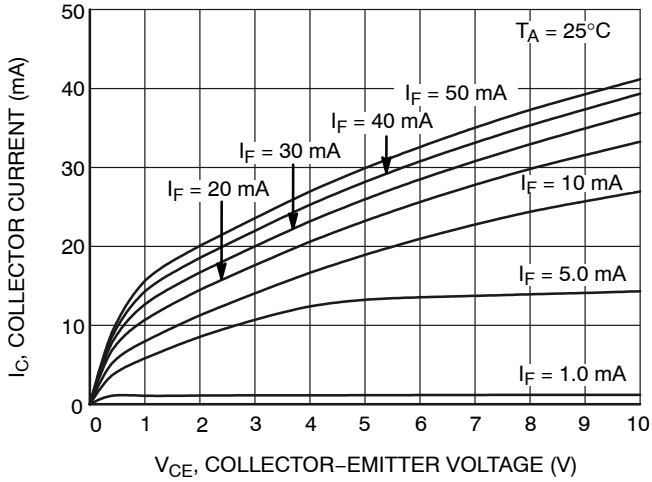


Figure 6. Collector Current vs. Collector−Emitter Voltage

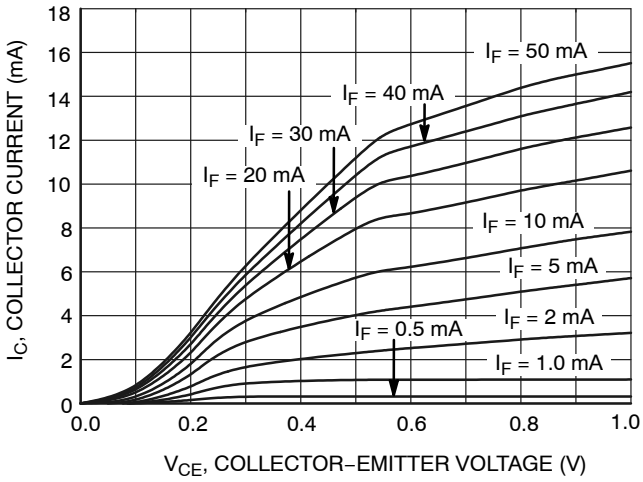


Figure 7. Collector Current vs. Collector−Emitter Voltage

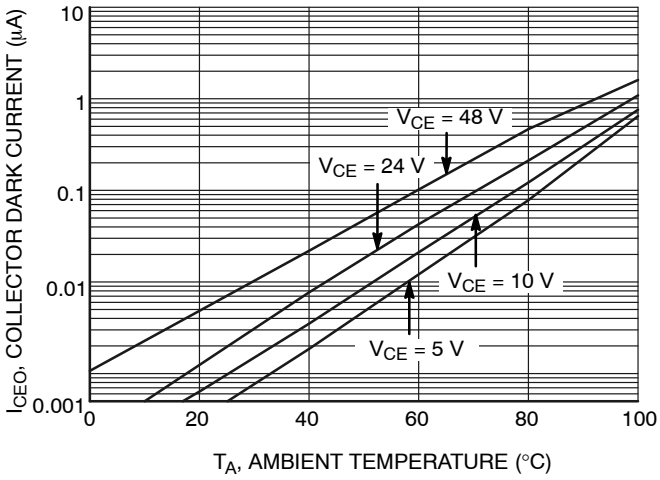


Figure 8. Collector Dark Current vs. Temperature

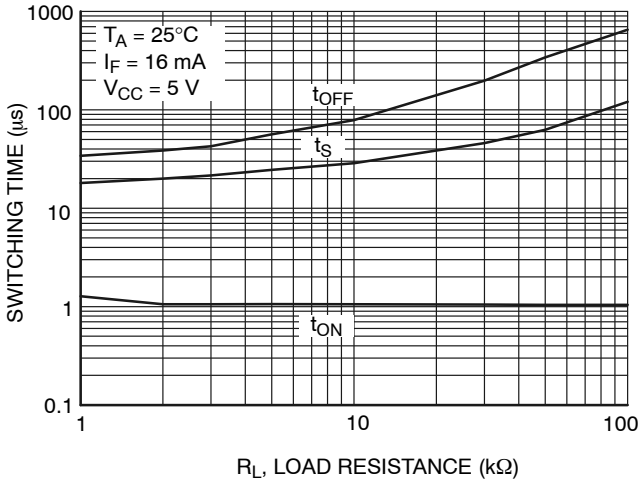


Figure 9. Switching Time vs. Load Resistance

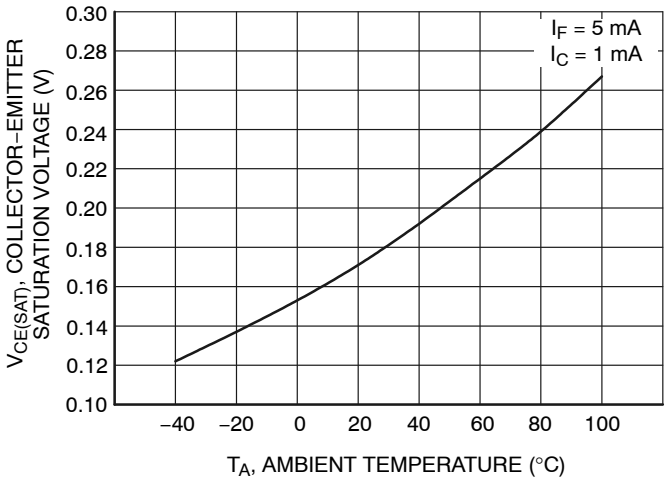
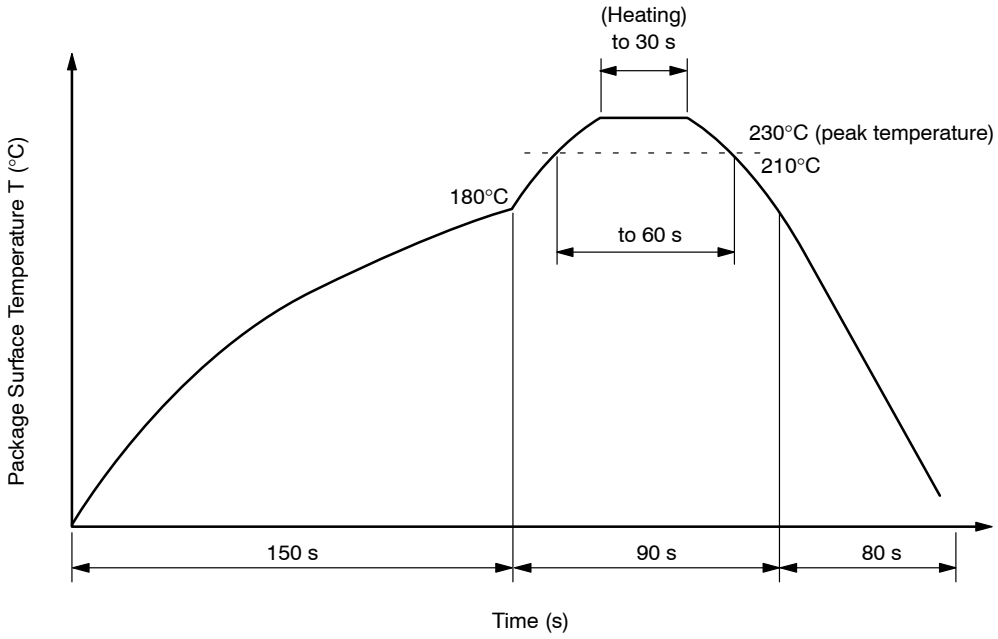


Figure 10. Collector−Emitter Saturation Voltage vs. Temperature

REFLOW PROFILE



- Peak reflow temperature: 230°C (package surface temperature) for 30 seconds
- Time of temperature higher than 210°C: 60 seconds or less
- One time soldering reflow is recommended

*For applications requiring 260C peak reflow performance, please order FODM214 series.

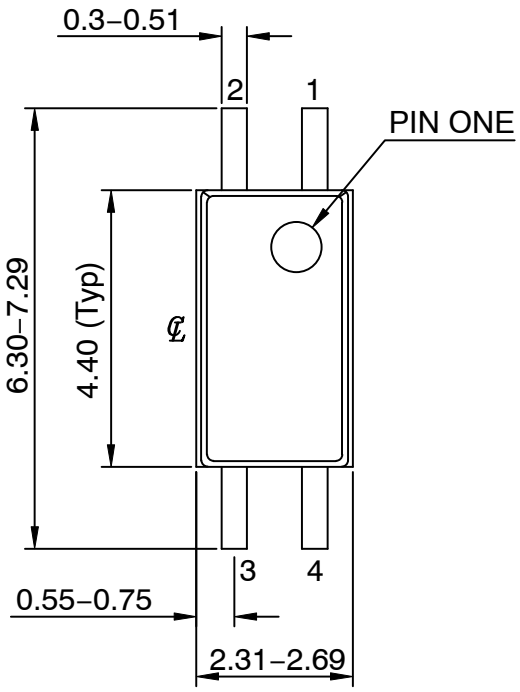
ORDERING INFORMATION

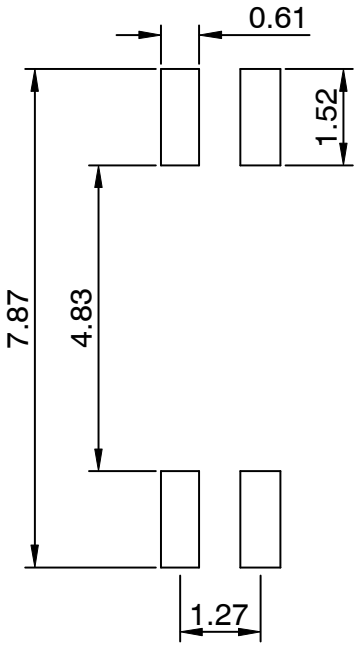
Device	Package	Shipping†
HMHAA280	MFP−4	150 Units / Tube
HMHAA280R2	MFP−4	2500 / Tape & Reel
HMHAA280R2V	MFP−4, VDE Option	2500 / Tape & Reel
HMHAA280V	MFP−4, VDE Option	150 Units / Tube

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

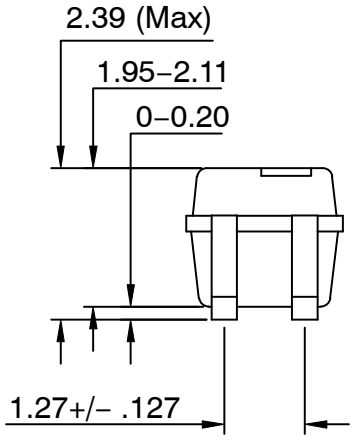
MFP4 2.5X4.4, 1.27P
CASE 100AL
ISSUE O

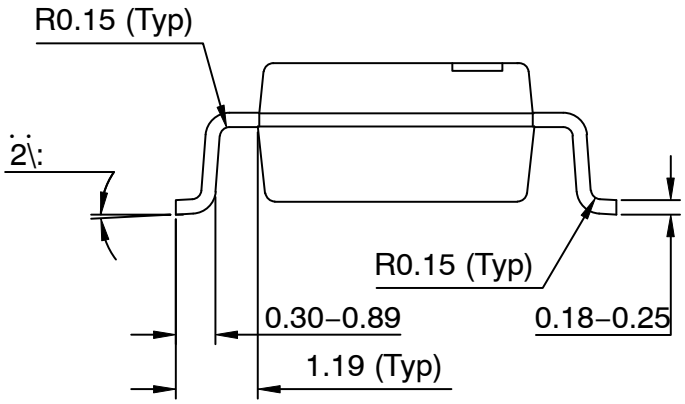
DATE 31 AUG 2016





LAND PATTERN RECOMMENDATION





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C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSION

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