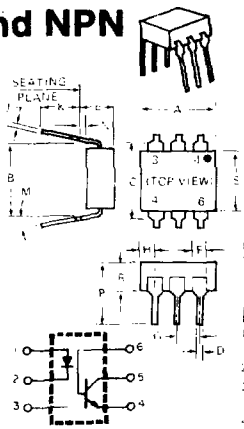
MCT210
Optoisolator
GaAs Infrared Emitting Diode and NPN Silicon Phototransistor

The MCT210 is a gallium arsenide, infrared emitting diode coupled with a silicon phototransistor in a dual in-line package. This device is also available in surface-mount packaging.

Ⓤ Covered under U.L. component recognition program, reference file E51868



SYMBOL	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN.	INCHES MAX	NOTES
A	8.38	8.89	330	350	
B	7.62 REF		300 REF		1
C		8.64		340	2
D	.406	.508	016	020	
E		5.08		200	3
F	1.01	1.78	040	070	
G	2.28	2.80	090	110	
H		2.16		085	4
J	.203	.305	008	012	
K	2.54		100		
M		15°		15°	
N	.381		015		
P		9.53		375	
R	2.92	3.43	115	135	
S	6.10	6.86	240	270	

NOTES
1. INSTALLED POSITION LEAD CENTERS
2. OVERALL INSTALLED DIMENSION
3. THESE MEASUREMENTS ARE MADE FROM THE SEATING PLANE
4. FOUR PLACES

absolute maximum ratings: (25°C)

INFRARED EMITTING DIODE		
Power Dissipation	*200	milliwatts
Forward Current (Continuous)	60	milliamps
Forward Current (Peak) (Pulse width 1 μsec 300 P Ps)	3	ampere
Reverse Voltage	3	volts

*Derate 2.6mW/°C above 25°C ambient.

PHOTO-TRANSISTOR		
Power Dissipation	**200	milliwatts
V_{CEO}	30	volts
V_{CBO}	70	volts
V_{ECO}	7	volts
Collector Current (Continuous)	100	milliamps

**Derate 2.6mW/°C above 25°C ambient.

TOTAL DEVICE
Storage Temperature -55 to 150°C
Operating Temperature -55 to 100°C
Lead Soldering Time (at 260°C) 10 seconds
Surge Isolation Voltage (Input to Output). $3535V_{(peak)}$ $2500V_{(RMS)}$
Steady-State Isolation Voltage (Input to Output). $3180V_{(peak)}$ $2250V_{(RMS)}$

individual electrical characteristics (25°C)

INFRARED EMITTING DIODE	TYP.	MAX.	UNITS
Forward Voltage V_F (I_F = 40mA)	1.1	1.5	volts
Reverse Current I_R (V_r = 6V)	–	10	microamps
Capacitance C_J (V = 0, f = 1 MHz)	50	–	picofarads

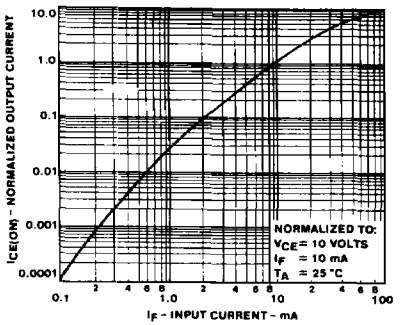
PHOTO-TRANSISTOR	MIN.	TYP.	MAX.	UNITS
Breakdown Voltage–$V_{(BR)CEO}$ (I_C = 10mA, I_F = 0)	30	–	–	volts
Breakdown Voltage–$V_{(BR)CBO}$ (I_C = 100μA, I_F = 0)	70	–	–	volts
Breakdown Voltage–$V_{(BR)ECO}$ (I_E = 100μA, I_F = 0)	6	–	–	volts
Collector Dark Current–I_{CEO} (V_{CE} = 10V, I_F = 0)	–	5	50	nanoamps
Capacitance (V_{CE} = 10V, f = 1MHz)	–	2	–	picofarads

coupled electrical characteristics (25°C)

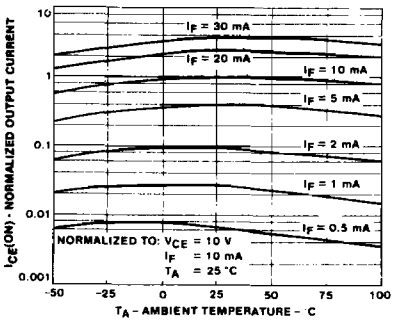
	MIN.	TYP.	MAX.	UNITS
DC Current Transfer Ratio (I_F = 3.2mA to 32mA, V_{CE} = 0.4V)	50	–	–	%
(I_F = 10mA, V_{CE} = 5V)	150	–	–	%
Saturation Voltage — Collector to Emitter (I_F = 32mA, I_C = 16mA)	–	0.1	0.4	volts
Isolation Resistance (Input to Output Voltage = $500V_{DC}$)	100	–	–	gigaohms
Input to Output Capacitance (Input to Output Voltage = 0, f = 1MHz)	–	–	2	picofarads
Switching Speeds: Rise/Fall Time (V_{CE} = 10V, I_{CE} = 2mA, R_L = 100Ω)	–	5	–	microseconds
Rise/Fall Time (V_{CB} = 10V, I_{CB} = 50μA, R_L = 100Ω)	–	300	–	nanoseconds

VDE Approved to 0883/6.80 0110b Certificate # 35025

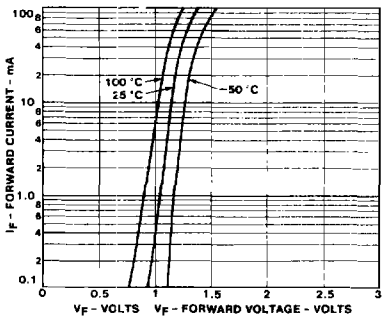
TYPICAL CHARACTERISTICS



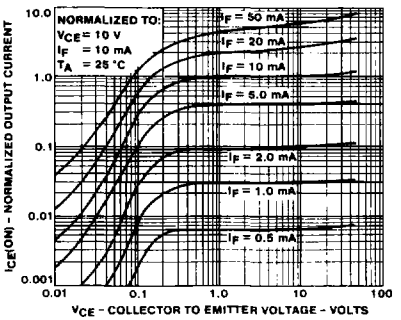
OUTPUT CURRENT VS INPUT CURRENT



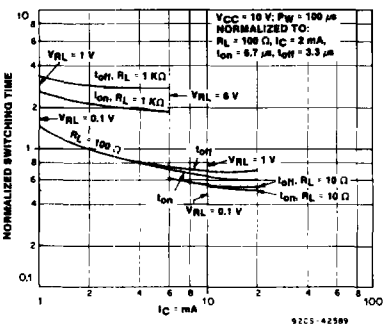
OUTPUT CURRENT VS TEMPERATURE



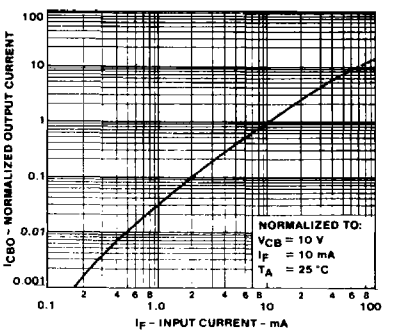
INPUT CHARACTERISTICS



V_{CE} - COLLECTOR TO EMITTER VOLTAGE - VOLTS
OUTPUT CHARACTERISTICS



SWITCHING SPEED VS. COLLECTOR CURRENT
(NOT SATURATED)



OUTPUT CURRENT (I_{CBO}) VS INPUT CURRENT

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