

## Photo Detector Chip Triac Driver Output

... designed for use with IRED (MLEDC1000) to optically couple logic systems with power triacs to control equipment powered from 120 Vac and 240 Vac lines.

- Zero Voltage Crossing
- High Blocking Voltage —  $V_{DRM} = 600$  V Min
- Metallization Compatible with Conventional Wire and Die Bonding Techniques
- Available in Chip or Wafer Form

**MRDC600**

**PHOTO DETECTOR CHIP  
 TRIAC DRIVER  
 OUTPUT**

### MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Off-State Output Terminal Voltage	$V_{DRM}$	600	Volts
Peak Repetitive Current (PW = 100 $\mu\text{s}$ , 120 pps)	$I_T$	300	mA
Peak Nonrepetitive Surge Current (PW = 10 ms)	$I_{TSM}$	1.2	A
Total Power Dissipation (Note 1)	$P_D$	300	mW
Operating Junction Temperature Range	$T_J$	-40 to +100	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 to +200	$^\circ\text{C}$

### STATIC ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Blocking Current, Either Direction (Note 2) ( $V_{DRM} = 600$ V)	$I_{DRM1}$	—	60	500	nA
Peak On-State Voltage, Either Direction ( $I_{TM} = 100$ mA Peak)	$V_{TM}$	—	1.8	3	Volts
Critical Rate of Rise of Off-State Voltage	dv/dt	—	1500	—	V/ $\mu\text{s}$
Critical Rate of Rise of On-State Voltage	dv/dt	—	0.15	—	V/ $\mu\text{s}$

### OPTICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Radiation Flux Density ( $V_{TM} = 3$ V, $R_L = 150$ $\Omega$ , $\lambda = 940$ nm)	$H_{FT}$	—	5	10	mW/cm <sup>2</sup>
Holding Current, Either Direction ( $H = 10$ mW/cm <sup>2</sup> , $\lambda = 940$ nm)	$I_H$	—	100	—	$\mu\text{A}$

### ZERO CROSSING CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Leakage in Inhibited State ( $V_{DRM} = 400$ V, $H = 20$ mW/cm <sup>2</sup> , $\lambda = 940$ nm)	$I_{DRM2}$	—	100	300	$\mu\text{A}$
Inhibit Voltage ( $H = 20$ mW/cm <sup>2</sup> , MT1-MT2 Voltage above which device will not trigger)	$V_{IH}$	—	10	20	V

### DIE SPECIFICATIONS

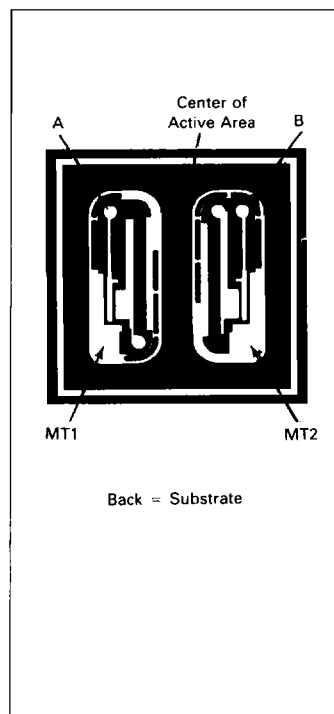
Die Size Mils	Die Thickness Mils	Bond Pad Size Mils	Metallization		Active Area Square Mils	
			MT1-MT2	Front <sup>(3)</sup>		Back <sup>(4)</sup>
45 x 45	8-10	4.6 Dia.		Al	Au	1400

NOTES: 1. Maximum power dissipation rating is determined with chip mounted on a header or lead frame using conventional Motorola Semiconductor assembly techniques.

2. Test voltage must be applied within off state dv/dt rating.

3. Thickness — a minimum of 10,000 Å.

4. Thickness — a minimum of 15,000 Å.



# MRDC600

## TYPICAL CHARACTERISTICS

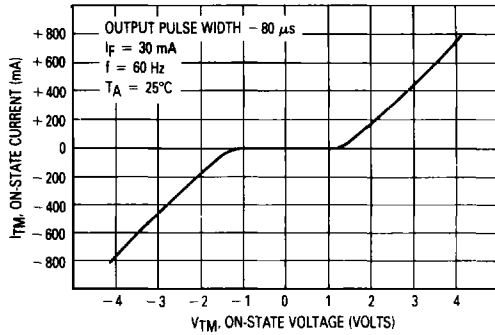


Figure 1. On-State Characteristics

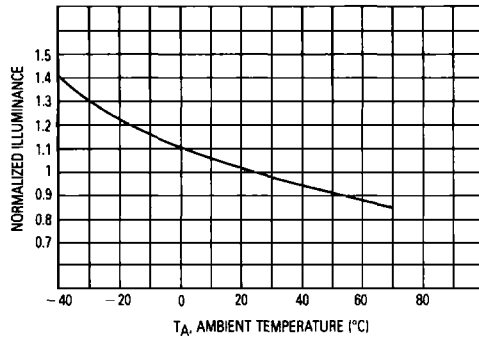


Figure 2. Illuminance versus Temperature

## ORDERING INFORMATION

This die is available with the packaging and visual inspection options listed below. To obtain the desired combination of options, it will be necessary to add a suffix to

the die type number in accordance with the information given in Table 1.

TABLE 1

Die Type Suffix	Packaging	Description	Visual Inspection
None	Multi-Pak	Chips in waffle package (individual chip compartments)	100% visually inspected Rejects removed
WP	Wafer Pak	Wafer-probed, unscribed, unbroken and heat sealed in plastic bag (rejects are inked)	Visual inspected by sample to a LTPD = 10
CP	Circle Pak	Wafer-probed, mounted on sticky film, sawed through and heat sealed in plastic bag (rejects are inked)	Visual inspected by sample to a LTPD = 10