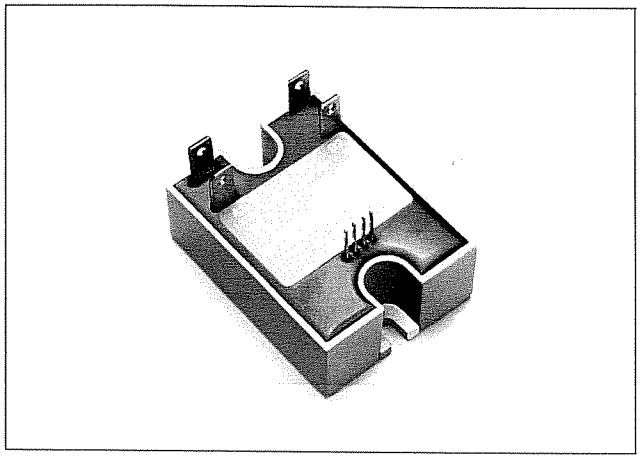
SILICON POWER CUBE

40 AMP DUAL SOLID STATE AC RELAY SCR OUTPUT



MODEL NO.	SWITCHING MODE
40DR1D	Zero Switch
40DR2D	Random, Phase Controllable

FEATURES

- Two independent 40 Amp Solid State Relays in one standard package
- SPC's Inverse-Parallel SCR Power Hybrid technology provides highly efficient thermal management for greatly increased cyclic life
- High performance/low cost circuit design
- 2500 Vrms optical isolation
- Both "Zero Voltage" & phase controllable "Random " switching versions
- UL Recognized
  CSA Certified

PARAMETER	UNITS	SPECIFICATION LIMITS		REF.
MODEL NO.		40DR1D	40DR2D	Note 3
INPUT SPECIFICATIONS (EACH SECTION)				
Control Voltage Range	Vdc	4—15		
Input Current (Max.)	mAdc	45		
Must Turn On Voltage	Vdc	4		
Must Turn Off Voltage	Vdc	1		
Reverse Polarity Protection (Max.)	Vdc	15		
COUPLING SPECIFICATIONS (INPUT/OUTPUT)				
Dielectric (Min.)	Vrms	2500		Note 1
Insulation Resistance (Min. @500Vdc)	Ohms	10^{10}		
Capacitance (Max.)	pF	10		
OUTPUT SPECIFICATIONS (EACH SECTION)				
Load Current Range	Arms	.05 - 40		Fig. 1
Surge Current, 1 Cycle (Max.)	Apk	500		Fig. 2
Load Voltage Range	Vrms	24 - 280		
Transient Overvoltage	Vpk	600		
Frequency Range	Hz	47 - 70		
Off-State dv/dt (Min.)	V/μsec	200		
Off-State Leakage Current (Max.)	mArms	10		
On-State Voltage Drop (Max.)	Vpk	1.6		
Thermal Resistance, Junction-Case ($R\Theta_{J\text{-}c}$) (One Section ON)	°C/W	0.5		Note 2
Thermal Resistance, Junction-Case ($R\Theta_{J\text{-}c}$) (Both Sections ON)	°C/W	0.25		Note 2
I^2t, @ t=8.3mSec (Max.)	A^2Sec	1040		
Power Factor (Min.) With Max. Load	—	.5		
Turn-On Time (Max.) @ 60 Hz	mSec	8.3	0.02	
Turn-Off Time (Max.) @ 60 Hz	mSec	8.3		

CHARACTERISTIC CURVES

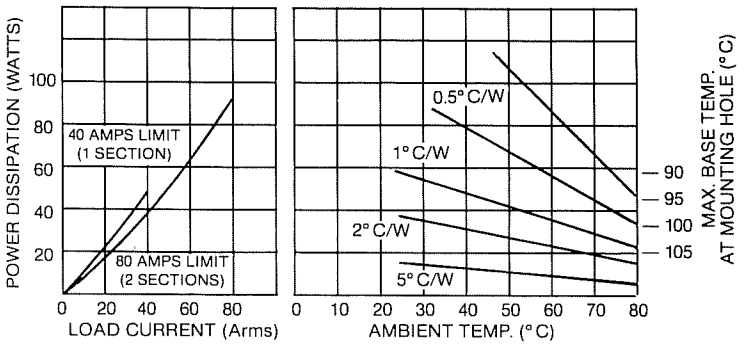


FIGURE 1 — THERMAL DERATING CURVES

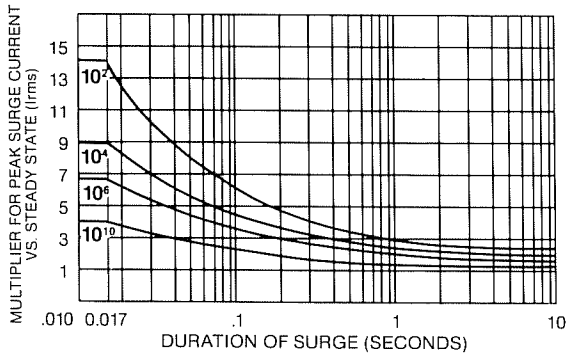


FIGURE 2 — ALLOWABLE PEAK SURGE CURRENT VS. DURATION/EXPECTED LIFETIME

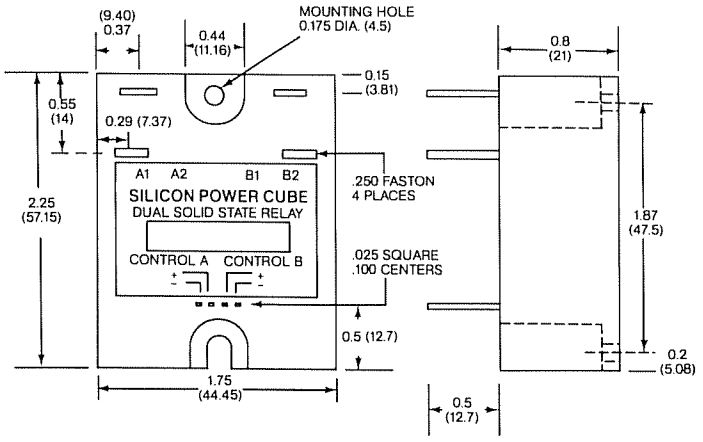
▲ **EXAMPLE:**
Knowing maximum load current and maximum ambient temperature, use derating curves to determine required heat sink and maximum allowable base plate temperature. On left hand power dissipation curve, locate the point corresponding to maximum load current. Extend a line to the right from that point to the intersection of vertical line on right hand chart corresponding to maximum ambient temperature. From heat sink curve, read directly or extrapolate required heat sink size. Extend the line farther to the right and read on the right hand scale the maximum allowable base plate temperature.

◀ Family of curves shows approximate expected lifetime of relay when subjected to repetitive current surges, i.e., number of surges of a specific magnitude and duration.

NOTES:

1. Dielectric and insulation resistance are measured between input and output.
2. When mounting relays on heatsink surface, use a thin coating of thermal compound (Thermalloy "Thermalcote" or equivalent). This will result in a maximum thermal resistance, case–sink ($R\Theta_{C\text{-}S}$ of .07°C/W).
3. Single section versions available. Request P/N's 40SR1D, 40SR2D.

OUTLINE/MOUNTING DIMENSIONS



NOTE:
All terminal location dimensions are typical.
All Dimensions in inches (mm)
Tolerances: ± .035 (.88)

GENERAL SPECIFICATIONS

- Ambient temperature range:
  -30 to +80° C operating
  -40 to +120° C storage
- Weight: 3.5 oz. (98g) max.
- Case Material: Plastic, UL rated self extinguishing
- Base Plate Material: Aluminum
- Terminals: Tin-plated Brass, Nickel-plated screws supplied, unmounted.

WIRING DIAGRAM