

| Part* Number | DESC Drawing Number | Relay Description |
|-----------------|------------------------|------------------------------------|
| 652-1 | M28750/10-001 | 25A, 250Vrms, AC Solid State Relay |
| 652-2 | M28250/10-002 | |



* The Y suffix denotes parameters tested to MIL-PRF-28750 test methods.
The W suffix denotes parameters tested to Teledyne specifications.

ELECTRICAL SPECIFICATIONS

(-55°C TO +110°C CASE TEMPERATURE, UNLESS OTHERWISE SPECIFIED)

INPUT (CONTROL) CHARACTERISTICS

| | Min | Typ | Max | Units |
|-----------------------------------|-----|-----|-----|-------|
| Input Current (See Figure 1) | | | | |
| $V_{IN} = 5$ Vdc | | 10 | 15 | mA |
| $V_{IN} = 32$ Vdc | | 11 | 16 | mA |
| Turn-Off Voltage (Guaranteed Off) | | | 1.0 | Vdc |
| Turn-On Voltage (Guaranteed On) | 4 | | | Vdc |
| Reverse Voltage Protection | | | -32 | Vdc |
| Input Voltage Range | 4 | | 32 | Vdc |

OUTPUT (LOAD) SPECIFICATIONS

| | Min | Typ | Max | Units |
|--|--------|-----|-----------|------------|
| Output Current Rating (See Figure 2 & 3) | | | 25 | Arms |
| Output Voltage Rating | 25 | | 250 | Vrms |
| Frequency Range | 45 | | 440 | Hz |
| Output Voltage Drop @ 25 Ampere | | | 1.5 | Vrms |
| Off-State Leakage Current (250 Vac, 400 Hz) | | | 10 | mArms |
| Turn-On Time | | | 1/2 | Cycle |
| Turn-Off Time | | | 1 | Cycle |
| Transient Voltage ($T \leq 5$ s) | | | ± 500 | Vpk |
| Overload Current (for 1 second) | | | 80 | Arms |
| DC Offset Voltage | | | ± 150 | mV |
| Zero Voltage Turn-On Point | | | | |
| 652-1 | | | ± 15 | Vpk |
| 652-2 | | | $+40$ | Vpk |
| dv/dt (See Note 1) | 200 | 400 | | V/ μ s |
| Insulation Resistance @ 500 Vdc | 10^8 | | | Ohm |

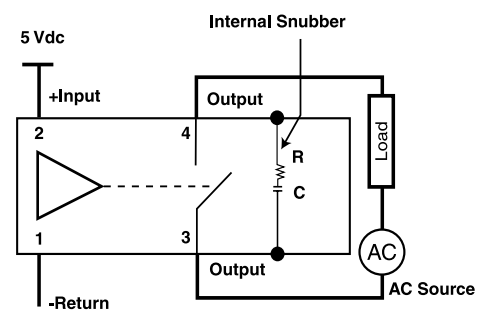
FEATURES

- Qualified to MIL-PRF-28750
- Optical isolation
- Zero voltage turn-on
- Zero current turn-off
- Logic compatible input
- Available to W or Y screening levels

DESCRIPTION

The 652 series is an AC output solid state relay designed for power switching. This relay incorporates a sealed, optically coupled solid state relay as a zero voltage turn-on driver. The input circuit is TTL logic compatible. Output switching is accomplished by back-to-back SCRs with a built-in snubber circuit, which provides reliable switching of both resistive and reactive loads with power factors as low as 0.2. The protected drive circuitry provides high transient immunity while reducing the commutation spike for low EMI. The 652 series is housed in a sealed aluminum case to withstand severe environmental conditions encountered in military and aerospace applications. These relays are qualified to MIL-PRF-28750/10 and are available to a W or Y screening level.

WIRING DIAGRAM



OUTPUT (LOAD) SPECIFICATIONS

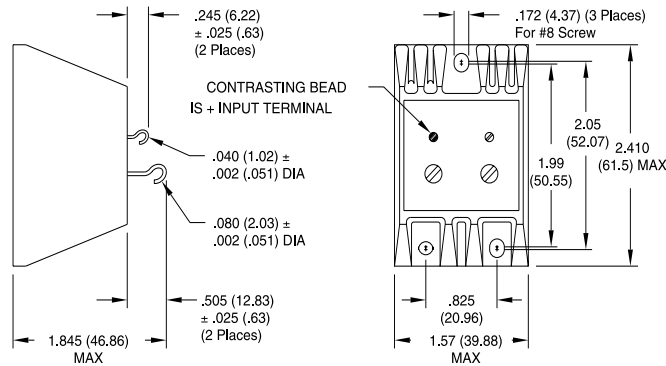
| | Min | Typ | Max | Units |
|--|------|-----|-----|-----------------------------|
| Dielectric Withstanding Voltage | 1500 | | | Vac |
| Power Dissipation | | | 38 | Watts |
| Thermal Resistance Junction to Ambient (θ_{JA}) | | | 10 | $^{\circ}\text{C}/\text{W}$ |
| Thermal Resistance Junction to Case (θ_{JC}) | | | 1.2 | $^{\circ}\text{C}/\text{W}$ |

ENVIRONMENTAL SPECIFICATIONS

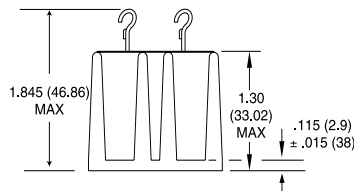
| | Min | Typ | Max | Units |
|--------------------------|-----|-----|------|--------------------|
| Ambient Temperature | | | | |
| Operating | -55 | | +110 | $^{\circ}\text{C}$ |
| Storage | -55 | | +125 | $^{\circ}\text{C}$ |
| Shock for 0.5 ms | | | 1500 | g |
| Vibration, 10 to 3000 Hz | | | 30 | g |

*Contact factory for higher level environmental requirements

MECHANICAL SPECIFICATIONS



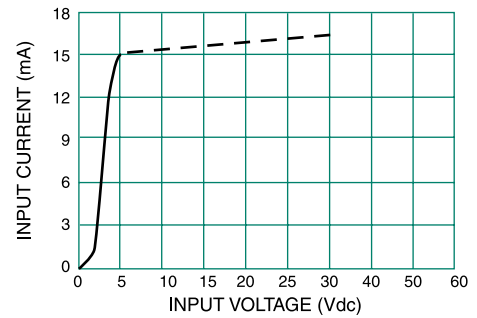
- **Weight: 6 oz. max.**
- **Case Material:**
Aluminum Nickle Plated



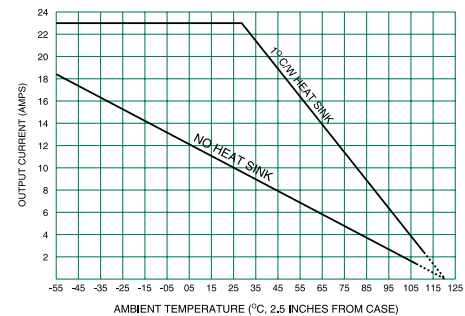
DIMENSIONS ARE SHOWN IN INCHES (MILLIMETERS)

NOTES

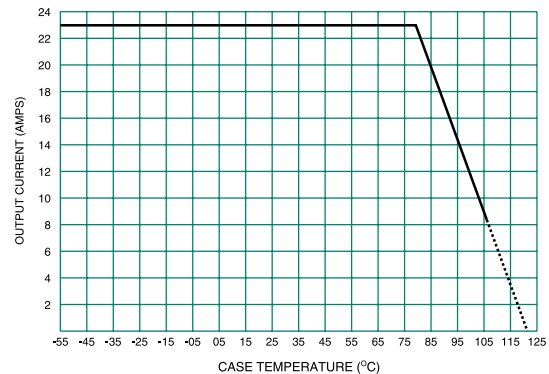
1. Output transient (dv/dt) protection is provided in all models. The dv/dt rating is based on a source impedance of 50 ohms.
2. Case temperature measurement point is center of mounting surface.
3. Designed to operate within all categories of MIL-STD-704B Aircraft Power Limits.
4. Designed to switch resistive or inductive load to 0.2 power factor.



TYPICAL INPUT CURRENT VS INPUT VOLTAGE
FIGURE 1



MAXIMUM ALLOWABLE CURRENT VS AMBIENT TEMPERATURE
FIGURE 2



MAXIMUM ALLOWABLE CURRENT VS CASE TEMPERATURE
FIGURE 3 (See Note 2)