

53215, 53216, and 53217

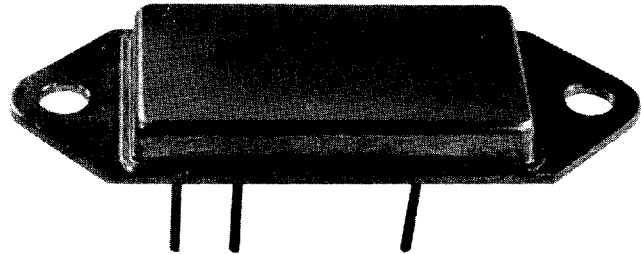
SPST SOLID STATE POWER CONTROLLERS



FEATURES

- Short Circuit Protection with Status Output
- SPST, Normally Open
- Up to 1000 V RMS Isolation
- Output Current to 10 Amps DC (53215)
- Power FET Output - Low On-state Resistance
- Full Military Temperature Operation:
-55°C to +125°C
- Military Environmental Screening Available

MILITARY HIGH-CURRENT DC POWER CONTROLLERS WITH INTEGRAL SHORT CIRCUIT PROTECTION



GENERAL DESCRIPTION

The MII 53215, 53216, and 53217 are military SPST high-power solid-state relays. These light-weight devices are resistant to damage from shock and vibration, and are immune to contact-related problems (contamination, arcing) associated with mechanical equivalents.

Transformer coupling between the input and output stages provides effective isolation up to 1000 volts AC RMS. Power FET outputs eliminate bipolar offset, and minimize output voltage drop for high current capability.

The control input logic may be driven by either CMOS or TTL, and will accommodate bias supplies ranging between 3.8 and 32 VDC.

Integral short-circuit protection with status line output is provided. These units sense excessive current flow while under load or while switching, and respond by opening the output. An open-collector output is available to indicate that the short circuit protection has been activated. The output will remain blocked indefinitely until the short is removed and the unit reset. This feature prevents damage to the controller and also averts further system failures that may be caused by short circuit. Status line output remains on until the relay is turned off for resetting. Resetting the unit can be accomplished by recycling the input control.

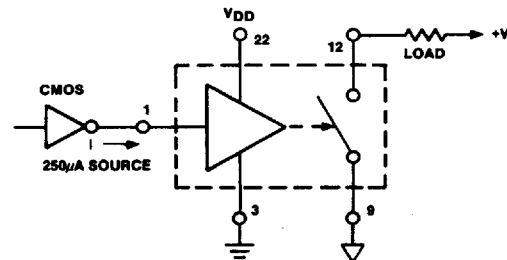


Figure 1. CMOS Input Configuration

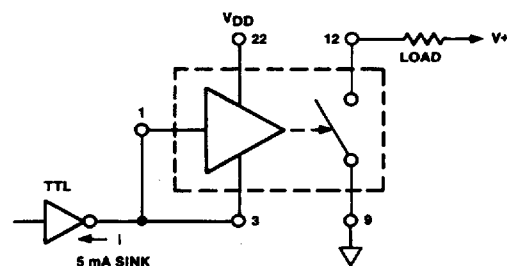


Figure 2. TTL Input Configuration

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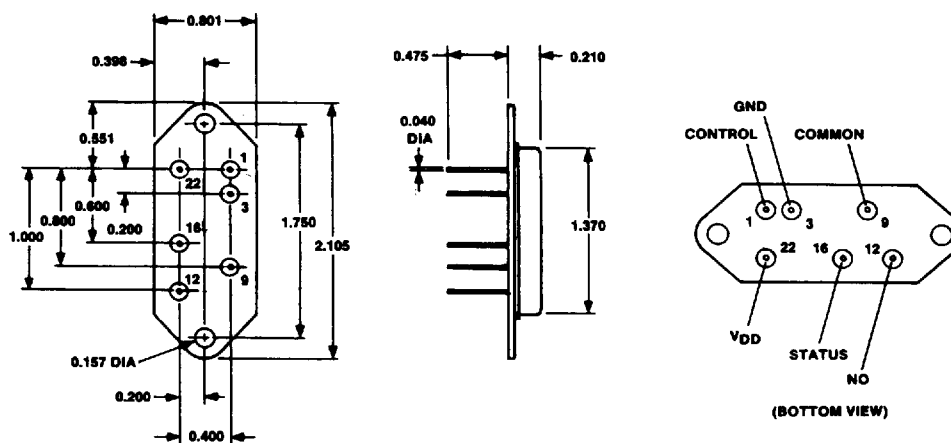
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53215, 53216, 53217

SPST SOLID-STATE POWER CONTROLLERS

[查询 53216 供应商](#)

PACKAGE DIMENSIONS



ALL DIMENSIONS IN INCHES

22-PIN DIP CONFIGURATION METAL CAN

ABSOLUTE MAXIMUM RATINGS

| | |
|--|----------------------|
| Isolation Voltage ¹ | 1000 VAC RMS |
| Continuous Operating Output Voltage ³ : 53215 | 60 VDC |
| 53216 | 200 VDC |
| 53217 | 400 VDC |
| Load Current ² : 53215 | 10.0 Amps DC |
| 53216 | 5.0 Amps DC |
| 53217 | 3.0 Amps DC |
| Bias Supply Voltage, V _{DD} | 3.8 to 32 VDC |
| Operating Temperature | -55°C to +125°C Case |
| Storage Temperature | -55°C to +125°C |

Notes: ¹ 60 Hz sine wave

² At T_C 125°C max.

³ Reversing polarity on the output may cause permanent damage

⁴ Devices will not tolerate "short while on" at load voltages exceeding 28 VDC.

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53215, 53216, 53217**SPST SOLID STATE POWER CONTROLLERS****ELECTRICAL CHARACTERISTICS*** $T_A = +25^{\circ}\text{C}$

| PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|--|--|------|------|------|----------------------|
| Input Characteristics CMOS Configuration (Figure 1) | | | | | |
| Bias Supply Range, V_{DD} | | 3.8 | | 32 | VDC |
| Bias Current | | | 3 | 5 | mA |
| Input Current | 5 VDC Input | | | 250 | μA |
| Control Voltage Range | | 3.8 | | 18 | VDC |
| Turn-Off Voltage | | | | 2.8 | VDC |
| Turn-On Voltage | | 0.5 | | | VDC |
| Total Hysteresis | | | 1.8 | | VDC |
| Dielectric Strength | 60 Hz | 1000 | | | VAC RMS |
| Input Characteristics TTL Configuration (Figure 2) | | | | | |
| Input Current | | | 3 | 5 | mA |
| Control Voltage Range | | 3.8 | | 32 | VDC |
| Turn-Off Voltage | Note 5 | | | 1.5 | VDC |
| Turn-On Voltage | Note 5 | 3.8 | | | VDC |
| Status On Voltage | On at 5 mA | | | 0.4 | Volts |
| Status Off Leakage | Off at 20 V | | | 20 | μA |
| Output Characteristics | | | | | |
| Output Current: | $T_c = 25^{\circ}\text{C}$ max | | | 10.0 | Amps DC |
| 53215 | Straight line derating to 0 Amps at $T_c = 125^{\circ}\text{C}$ | | | 5.0 | Amps DC |
| 53216 | | | | 3.0 | Amps DC |
| 53217 | | | | | |
| Continuous Blocking Voltage: | 53215 | | | 60 | VDC |
| 53216 | | | | 200 | VDC |
| 53217 | | | | 400 | VDC |
| On-State Resistance, R_{ds} : | 25 $^{\circ}\text{C}$ Case | | 0.08 | | Ohms |
| 53215 | | | 0.25 | | Ohms |
| 53216 | | | 0.50 | | Ohms |
| 53217 | | | | | |
| Turn-On Time at 25 $^{\circ}\text{C}$ Case | See Application Note 1 | | 0.4 | 0.8 | mSec |
| Turn-Off Time at 25 $^{\circ}\text{C}$ Case | | | 0.5 | 2.0 | mSec |
| Off-State Leakage | At Maximum Blocking Voltage | | 40 | 100 | μA |
| Capacitance Across Output: | 53215 | | | 2500 | pF |
| 53216 | | | | 2500 | pF |
| 53217 | | | | 700 | pF |
| Short-Circuit Current: | 25 $^{\circ}\text{C}$ | | 20 | | Amps |
| 53215 | | | 10 | | Amps |
| 53216 | | | 6 | | Amps |
| 53217 | | | | | |
| Short-Circuit Peak: | Shorted while on 25 $^{\circ}\text{C}$ | | 200 | | Amps |
| 53215 | See Application Note 4 | | 150 | | Amps |
| 53216 | | | 100 | | Amps |
| 53217 | | | | | |
| Junction Temperature | | | | 150 | $^{\circ}\text{C}$ |
| Thermal Resistance, θ_{JA} | | | | 30 | $^{\circ}\text{C/W}$ |
| θ_{JC} | | | | 5 | $^{\circ}\text{C/W}$ |

APPLICATION NOTES

- Maximum input switching frequency not to exceed 20 Hz under normal conditions, or 1 Hz if output is shorted.
- Input transitions should be < 1 mS as duration and input source should be "bounceless contact" type.
- Inductive loads must be diode suppressed
- Peak current that may flow when output is shorted.
- Devices will not tolerate "short while on" at load voltages exceeding 28 VDC.

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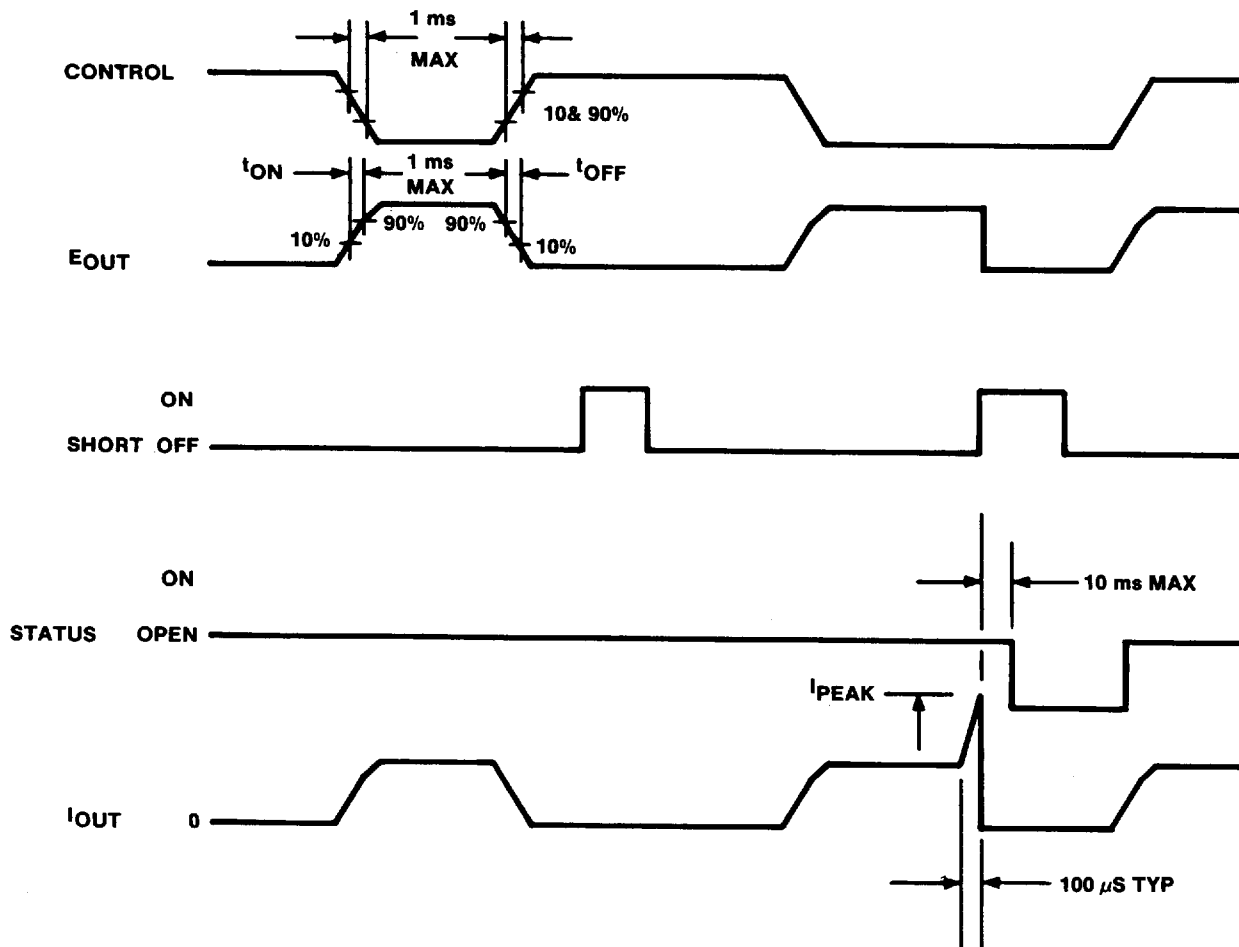
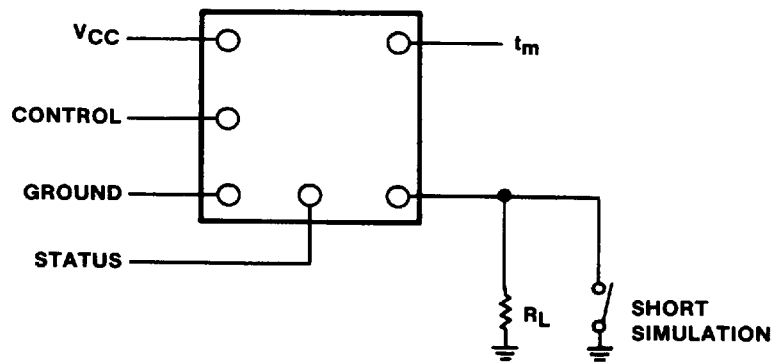
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SSP "SOLID STATE" POWER CONTROLLERS



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