# TR215

Telecommunications Switch
Transistor / 1 Form A Relay

## DESCRIPTION

The TR215 is a dual function circuit designed specifically as a telecommunications switch. It has an optically isolated solid state relay function that is separated from its transistor output detector function. The relay portion is composed of an LED on the input which is optically coupled to a sensing circuit which drives two back-to-back DMOS transistors. The detector circuit is composed of two back-to-back LEDs that drive an output photo-transistor.

## FEATURES

- Bi-directional solid state switch
- FCC compatible
- Bi-directional detector circuit
- Flat package, .090" (2.286) typical package height
- Fits most PCMCIA applications
- Very low control current

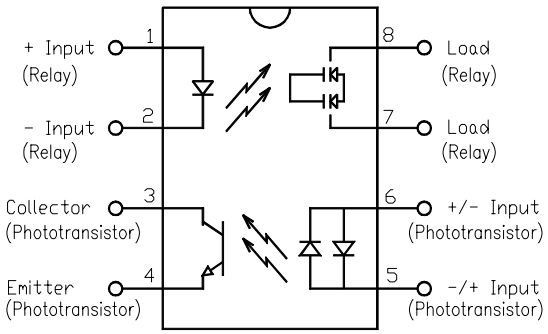
## APPLICATIONS

- Telecom tip / ring circuits
- Ring Detect
- Modem Switching (PCMCIA cards)
- Hookswitch
- Dial pulsing
- Ground start
- Loop detect

## OPTIONS / SUFFIXES

- -F Flat Pack Option
- -H High Output Isolation
- -S Surface Mount Option
- -TR Tape and Reel

## SCHEMATIC DIAGRAM




## MAXIMUM RATINGS

| PARAMETER | UNIT | MIN | TYP | MAX |
|---|---|---|---|---|
| Storage Temperature | C | - 55° | - | 125° |
| Operating Temperature | C | - 40° | - | 85° |
| Continuous Input Current | mA | - | - | 40 |
| Transient Input Current | mA | - | - | 400 |
| Reverse Input Control Voltage | V | 6.0 | - | - |
| Blocking Voltage | V | - | - | ± 400 |
| Output Power Dissipation | mW | - | - | 500 |

## APPROVALS

- BABT CERTIFICATE # 607835:
  BS EN 60950, BS EN 41003, BS EN 60065
- CSA CERTIFICATE # LR 111581-1
- UL FILE # E90096



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*ELECTRICAL CHARACTERISTICS - 25°C*

| PARAMETER | UNIT | MIN | TYP | MAX | TEST CONDITIONS |
|---|---|---|---|---|---|
| **RELAY INPUT SPECIFICATIONS** | | | | | |
| LED Forward Voltage | V | - | 1.2 | 1.5 | $I_f$ = 10mA |
| LED Reverse Voltage | V | 6.0 | 12 | - | $I_r$ = 10µA |
| Turn-On Current | mA | - | 2.5 | 5.0 | - |
| Turn-Off Current | mA | - | 0.5 | - | - |
| **RELAY OUTPUT SPECIFICATIONS** | | | | | |
| Blocking Voltage | V | - | - | 400 | $I_O$ = 10µA |
| Continuous Load Current | mA | - | - | 200 | $I_{in}$ = 5.0mA |
| On-Resistance | Ω | - | 6.0 | 10 | $I_O$ = 200mA |
| Leakage Current | µA | - | 0.5 | 2.0 | $V_O$ = 400V |
| Output Capacitance | pF | - | 25 | 50 | $V_O$ = 25, f = 1.0MHz |
| Offset Voltage | mV | - | - | 0.2 | $I_{in}$ = 5.0mA |
| **DETECTOR INPUT SPECIFICATIONS** | | | | | |
| LED Forward Voltage | V | - | 1.2 | 1.5 | $I_f$ = 10mA |
| Turn-On Current | mA | - | - | 0.5 | - |
| **DETECTOR OUTPUT SPECIFICATIONS** | | | | | |
| Breakdown Voltage | V | - | - | 60 | $I_C$ = 10µA |
| Leakage Current | nA | - | - | 500 | $V_{CE}$ = 20V |
| Collector - Emitter Capacitance | pF | - | 6.0 | - | $V_{CE}$ = 0V, f = 1.0kHz |
| Saturation Voltage | V | - | - | 0.5 | $I_f$ = 20mA |
| Current Transfer Ratio | % | 30 | 100 | 300 | $I_f$ = 2.0mA, $V_{CE}$ = 5.0V |
| **COUPLED SPECIFICATIONS** | | | | | |
| Isolation Voltage<br>-H Suffix | V | 2500<br>3750 | - | - | T = 1 Minute |
| Turn-On Time | mS | - | 2.0 | 5.0 | $I_f$ = 5.0mA, $I_o$ = 200mA |
| Turn-Off Time | mS | - | 0.15 | 0.5 | $I_f$ = 5.0mA, $I_o$ = 200mA |
| Isolation Resistance | Ω | $10^{11}$ | - | - | - |
| Coupled Capacitance | pF | - | - | 2.0 | - |
| Contact Transient Ratio | V/µS | 2000 | 7000 | - | dV = 50V |

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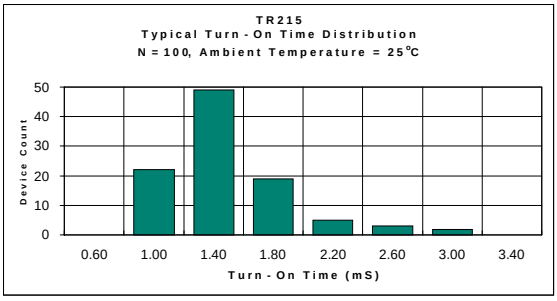
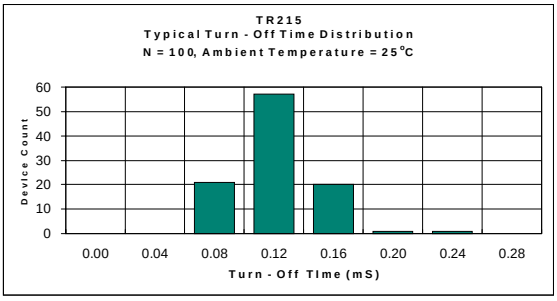
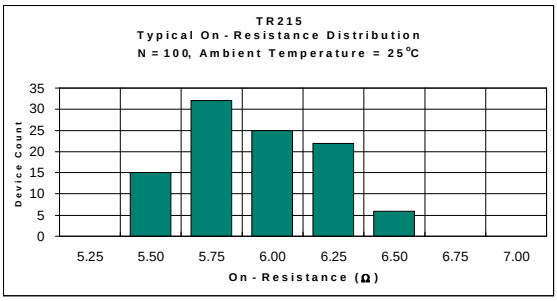
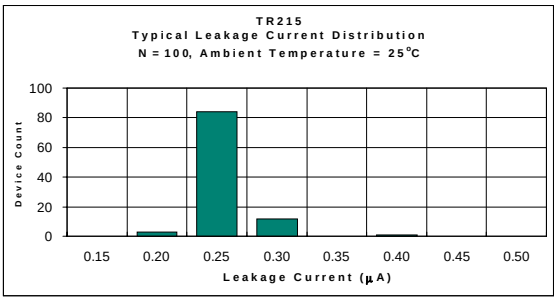
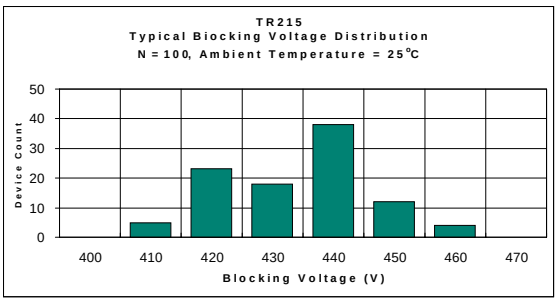
## *PERFORMANCE DATA*

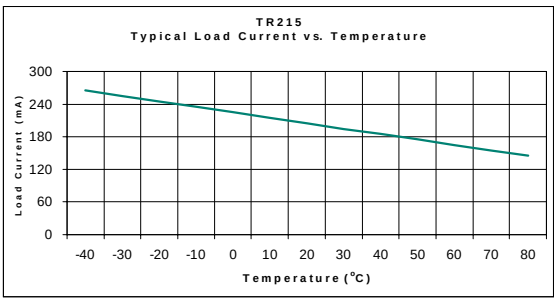


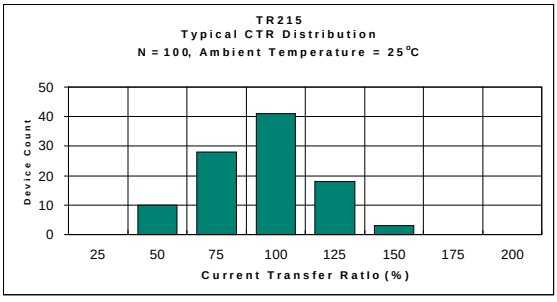



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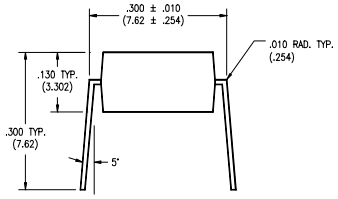
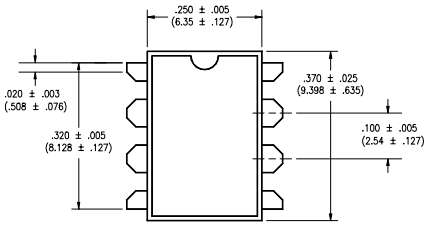
## MECHANICAL DIMENSIONS

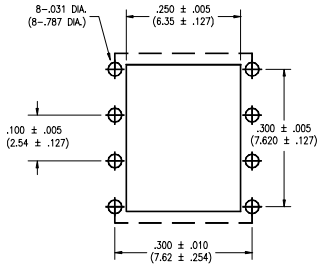
### 8 PIN DUAL IN-LINE PACKAGE




*END VIEW*

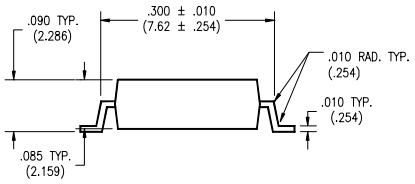



*TOP VIEW*

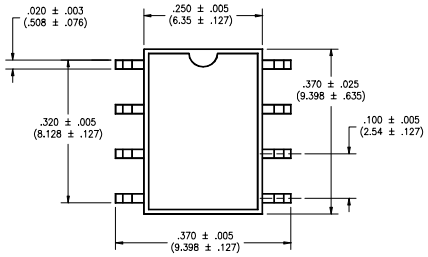



*BOTTOM VIEW /*
*BOARD PATTERN*

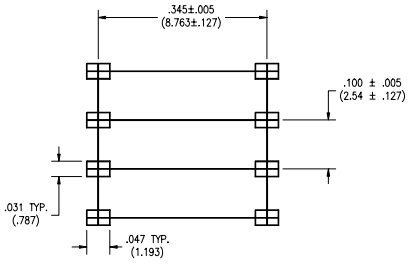
### 8 PIN FLATPACK




*END VIEW*




*TOP VIEW*




*BOTTOM VIEW /*
*BOARD PATTERN*