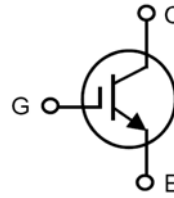
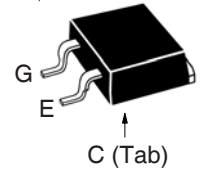


$V_{CES} = 2500V$
 $I_{C110} = 12A$
 $V_{CE(sat)} \leq 3.1V$

For Capacitor Discharge Applications



TO-263HV



G = Gate C = Collector
 E = Emitter Tab = Collector

| Symbol | Test Conditions | Maximum Ratings | |
|----------------|--|-----------------|------------|
| V_{CES} | $T_J = 25^\circ C$ to $150^\circ C$ | 2500 | V |
| V_{GGR} | $T_J = 25^\circ C$ to $150^\circ C$, $R_{GE} = 1M\Omega$ | 2500 | V |
| V_{GES} | Continuous | ± 20 | V |
| V_{GEM} | Transient | ± 30 | V |
| I_{C25} | $T_C = 25^\circ C$ | 30 | A |
| I_{C110} | $T_C = 110^\circ C$ | 12 | A |
| I_{CM} | $T_C = 25^\circ C$, $V_{GE} = 19V$, 1ms | 105 | A |
| | | 10ms | 55 |
| SSOA | $V_{GE} = 15V$, $T_{VJ} = 125^\circ C$, $R_G = 20\Omega$ | $I_{CM} = 60$ | A |
| (RBSOA) | Clamped Inductive Load | 1500 | V |
| P_C | $T_C = 25^\circ C$ | 150 | W |
| T_J | | -55 ... +150 | $^\circ C$ |
| T_{JM} | | 150 | $^\circ C$ |
| T_{stg} | | -55 ... +150 | $^\circ C$ |
| T_L | Maximum Lead Temperature for Soldering | 300 | $^\circ C$ |
| T_{SOLD} | 1.6 mm (0.062in.) from Case for 10s | 260 | $^\circ C$ |
| V_{ISOL} | 50/60Hz, 1 Minute | 4000 | V~ |
| Weight | | 2.3 | g |

Features

- International Standard Package
- High Voltage Package
- Electrically Isolated Tab
- High Peak Current Capability
- Low Saturation Voltage
- Molding Epoxies Meet UL 94 V-0 Flammability Classification

Advantages

- High Power Density
- Easy to Mount

Applications

- Capacitor Discharge
- Pulsar Circuits

| Symbol | Test Conditions ($T_J = 25^\circ C$, Unless Otherwise Specified) | Characteristic Values | | |
|---------------|---|-----------------------|------|---------------------------|
| | | Min. | Typ. | Max. |
| BV_{CES} | $I_C = 250\mu A$, $V_{GE} = 0V$ | 2500 | | V |
| $V_{GE(th)}$ | $I_C = 250\mu A$, $V_{CE} = V_{GE}$ | 3.0 | | 5.0 V |
| I_{CES} | $V_{CE} = 0.8 \cdot V_{CES}$, $V_{GE} = 0V$ $T_J = 125^\circ C$ | | | 25 μA 750 μA |
| I_{GES} | $V_{CE} = 0V$, $V_{GE} = \pm 20V$ | | | ± 100 nA |
| $V_{CE(sat)}$ | $I_C = 20A$, $V_{GE} = 15V$, Note 1 | | | 3.1 V |

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified) | Characteristic Values | | |
|--------------|---|-----------------------|------|-------------------------|
| | | Min. | Typ. | Max. |
| g_{fs} | $I_C = 20\text{A}$, $V_{CE} = 10\text{V}$, Note 1 | 8 | 13 | S |
| $I_{C(ON)}$ | $V_{GE} = 20\text{V}$, $V_{CE} = 15\text{V}$, Note 1 | | 190 | A |
| C_{ies} | $V_{CE} = 15\text{V}$, $V_{GE} = 25\text{V}$, $f = 1\text{MHz}$ | | 1190 | pF |
| C_{oes} | | | 53 | pF |
| C_{res} | | | 18 | pF |
| Q_g | $I_C = 20\text{A}$, $V_{GE} = 15\text{V}$, $V_{CE} = 1000\text{V}$ | | 53 | nC |
| Q_{ge} | | | 8 | nC |
| Q_{gc} | | | 22 | nC |
| $t_{d(on)}$ | Resistive Switching Times $I_C = 40\text{A}$, $V_{GE} = 15\text{V}$, Note 1 $V_{CE} = 1250\text{V}$, $R_G = 10\Omega$ | | 57 | ns |
| t_r | | | 160 | ns |
| $t_{d(off)}$ | | | 136 | ns |
| t_f | | | 930 | ns |
| R_{thJC} | | | | 0.83 $^\circ\text{C/W}$ |

Note 1. Pulse test, $t < 300\mu\text{s}$, duty cycle, $d < 2\%$.

TO-263HV Outline

| CREEPAGE DISTANCE | | |
|-----------------------------------|--------|----------------|
| DESCRIPTION | SYMBOL | MIN DISTANCE |
| LEAD TO LEAD AIR CLEARANCE | e2 | 0.163 [4.15mm] |
| LEAD TO LEAD Pkg SURFACE CREEPAGE | e2 | 0.165 [4.20mm] |
| LEAD TO BOTTOM DRAIN CREEPAGE | A2+D2 | 0.177 [4.50mm] |

| SYM | INCHES | | MILLIMETER | |
|------|--------|------|------------|-------|
| | MIN | MAX | MIN | MAX |
| A | .170 | .185 | 4.30 | 4.70 |
| A1 | .000 | .008 | 0.00 | 0.20 |
| A2 | .091 | .098 | 2.30 | 2.50 |
| b | .028 | .035 | 0.70 | 0.90 |
| b2 | .046 | .054 | 1.18 | 1.38 |
| C | .018 | .024 | 0.45 | 0.60 |
| C2 | .049 | .055 | 1.25 | 1.40 |
| D | .354 | .370 | 9.00 | 9.40 |
| D1 | .311 | .327 | 7.90 | 8.30 |
| D2 | .083 | .098 | 2.10 | 2.50 |
| E | .386 | .402 | 9.80 | 10.20 |
| E1 | .307 | .323 | 7.80 | 8.20 |
| e1 | .200 | BSC | 5.08 | BSC |
| (e2) | .163 | .174 | 4.13 | 4.43 |
| H | .591 | .614 | 15.00 | 15.60 |
| L | .079 | .102 | 2.00 | 2.60 |
| L1 | .039 | .055 | 1.00 | 1.40 |
| L3 | .010 | BSC | 0.254 | BSC |
| (L4) | .071 | .087 | 1.80 | 2.20 |

NOTE:

- These dimensions do not include mold protrusion.
- () is reference dimension only.
- Metal finish – Matte pure tin plating except trim area.
- Pin call out: 1- Gate; 2 - Emitter; 3 - Collector

IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

| | | | | | | | | | | |
|--|-----------|-----------|-----------|-----------|--------------|--------------|--------------|--------------|--------------|-------------|
| IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: | 4,835,592 | 4,931,844 | 5,049,961 | 5,237,481 | 6,162,665 | 6,404,065 B1 | 6,683,344 | 6,727,585 | 7,005,734 B2 | 7,157,338B2 |
| | 4,860,072 | 5,017,508 | 5,063,307 | 5,381,025 | 6,259,123 B1 | 6,534,343 | 6,710,405 B2 | 6,759,692 | 7,063,975 B2 | |
| | 4,881,106 | 5,034,796 | 5,187,117 | 5,486,715 | 6,306,728 B1 | 6,583,505 | 6,710,463 | 6,771,478 B2 | 7,071,537 | |

Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

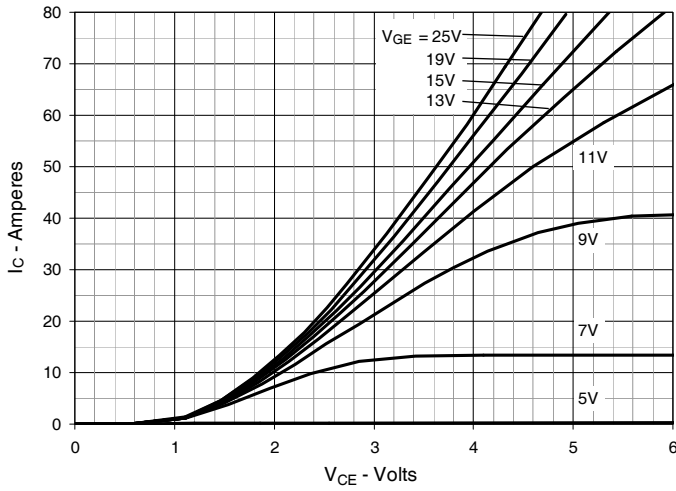


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

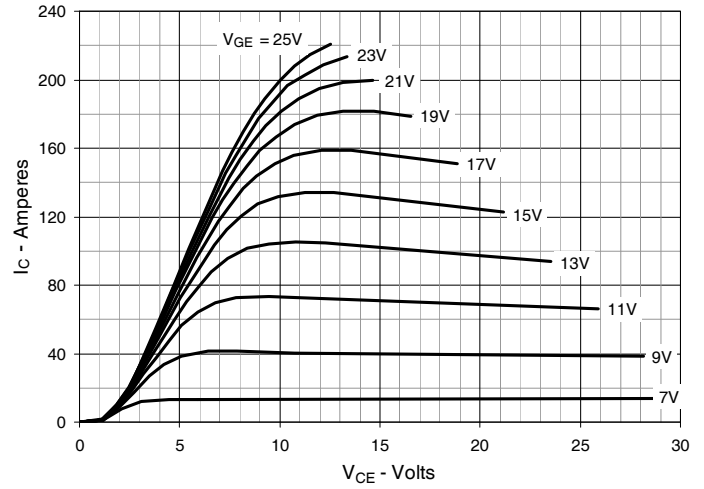


Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

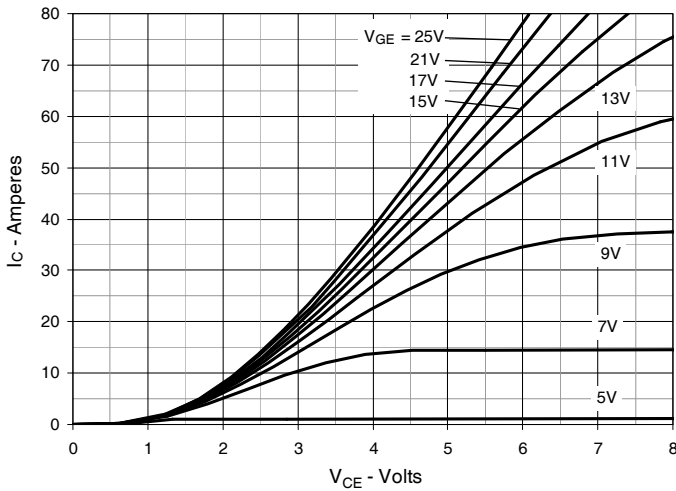


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

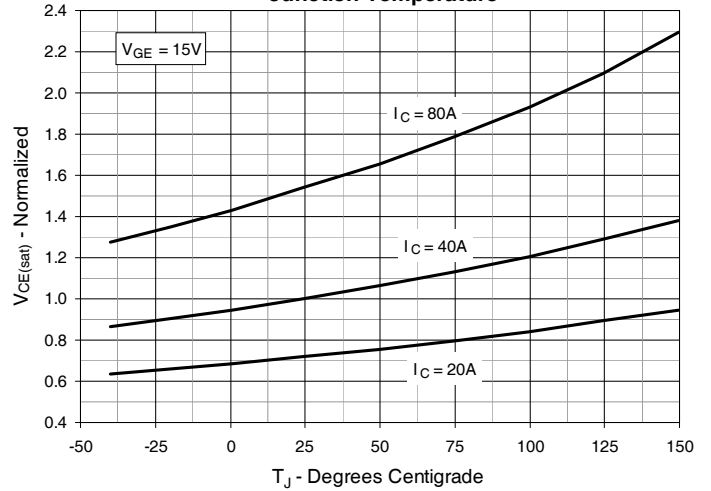


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

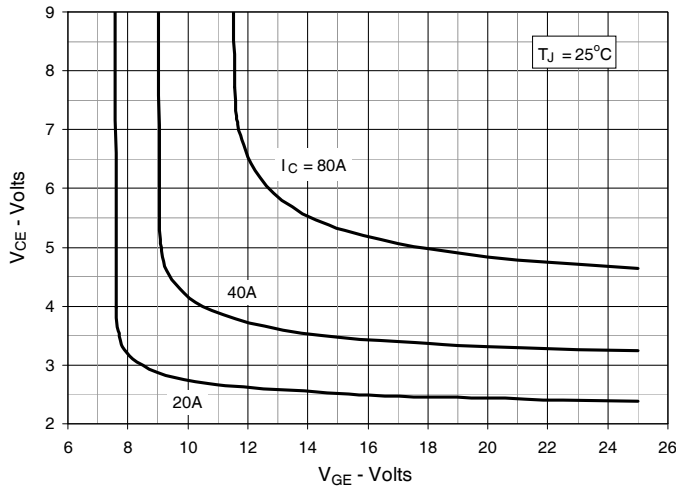


Fig. 6. Input Admittance

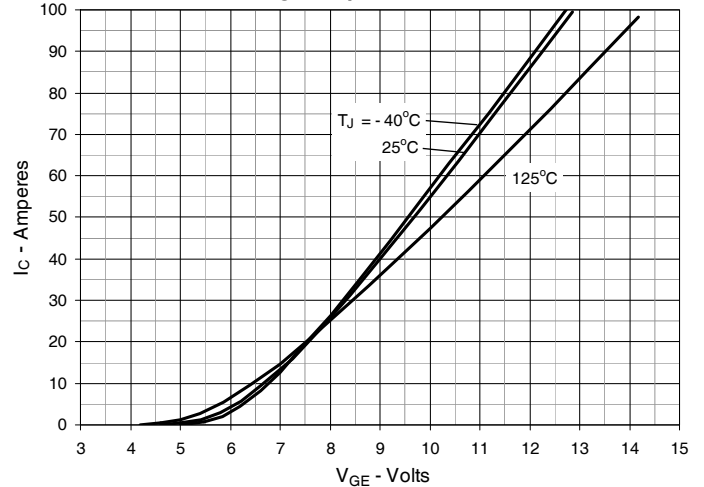


Fig. 7. Transconductance

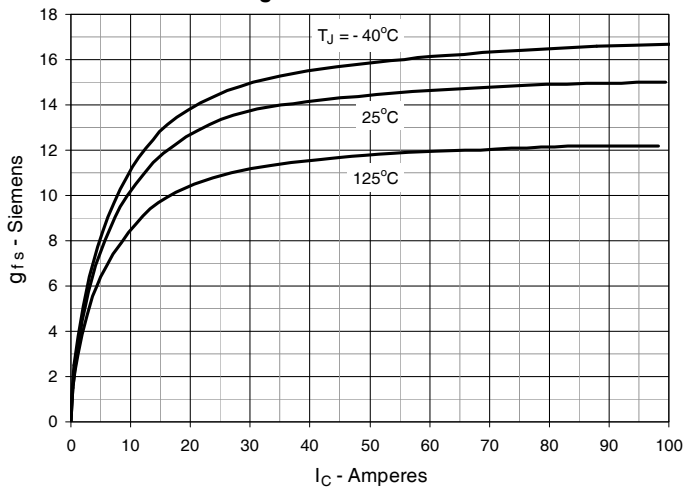


Fig. 8. Gate Charge

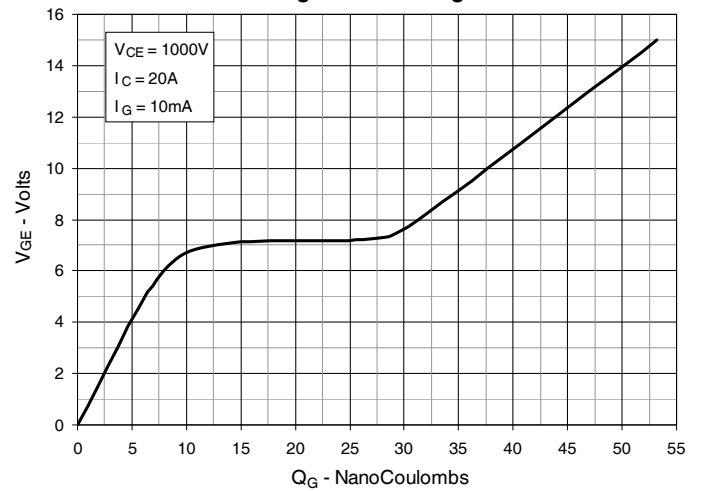


Fig. 9. Reverse-Bias Safe Operating Area

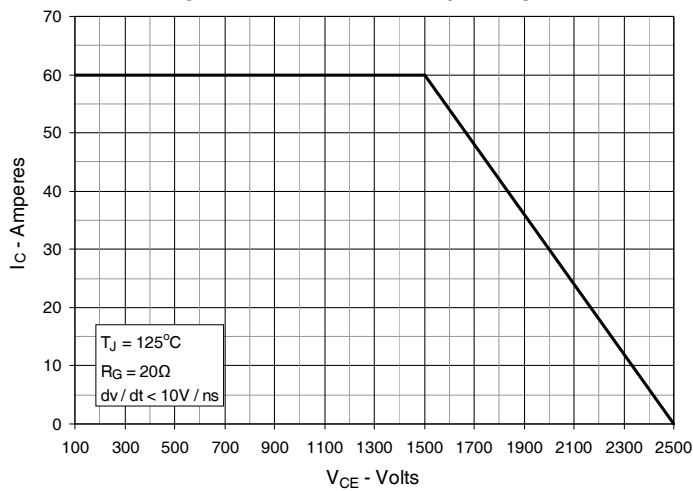


Fig. 10. Capacitance

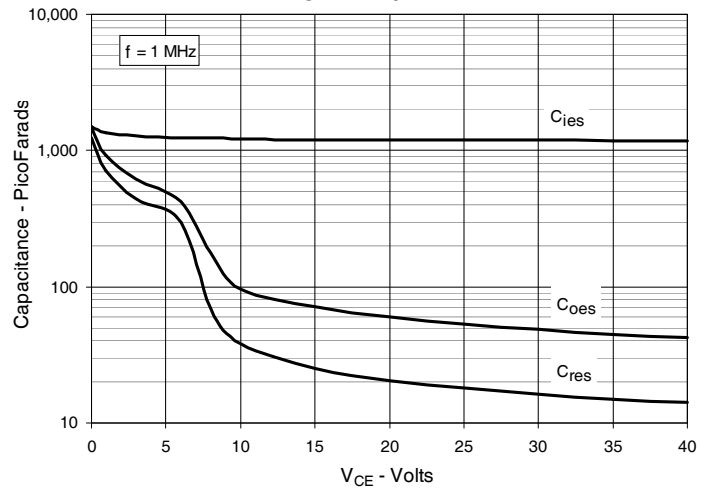


Fig. 11. Maximum Transient Thermal Impedance

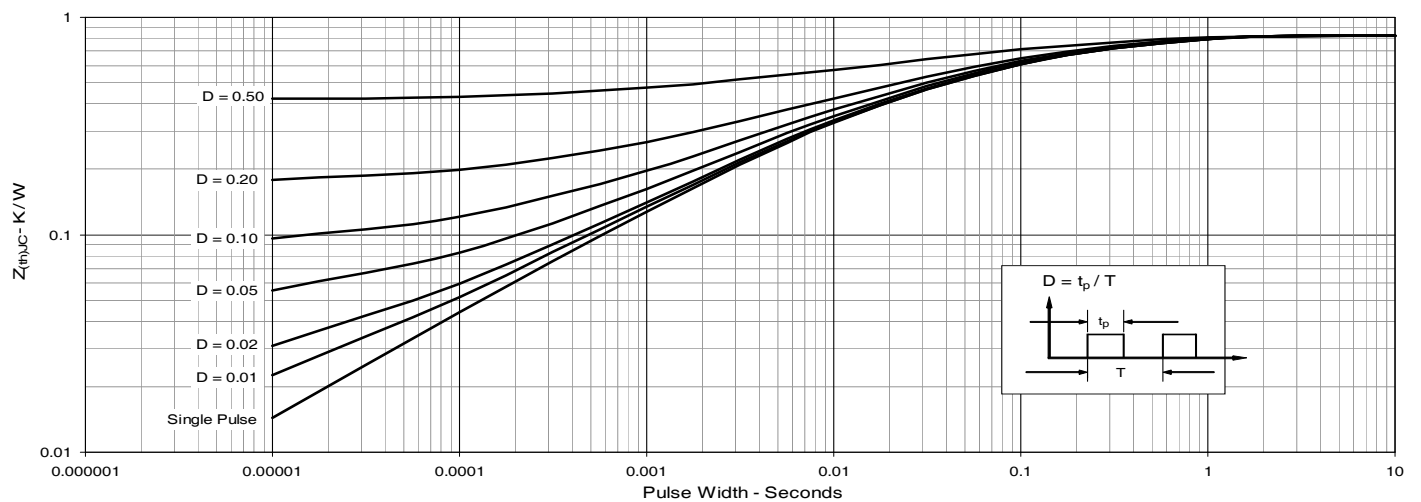


Fig. 12. Resistive Turn-on Rise Time vs. Junction Temperature

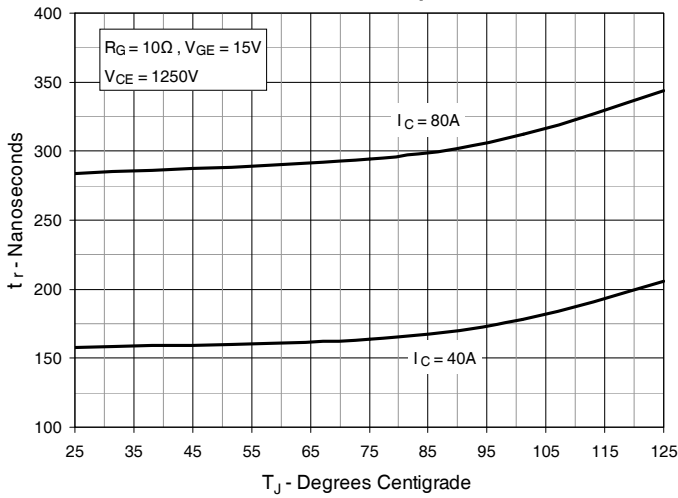


Fig. 13. Resistive Turn-on Rise Time vs. Collector Current

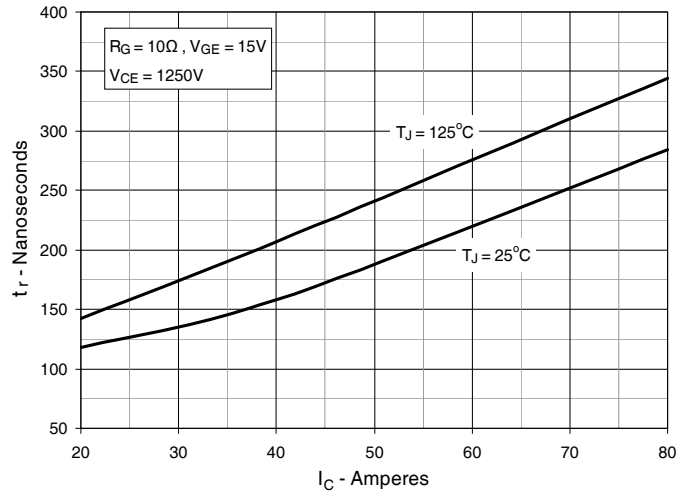


Fig. 14. Resistive Turn-on Switching Times vs. Gate Resistance

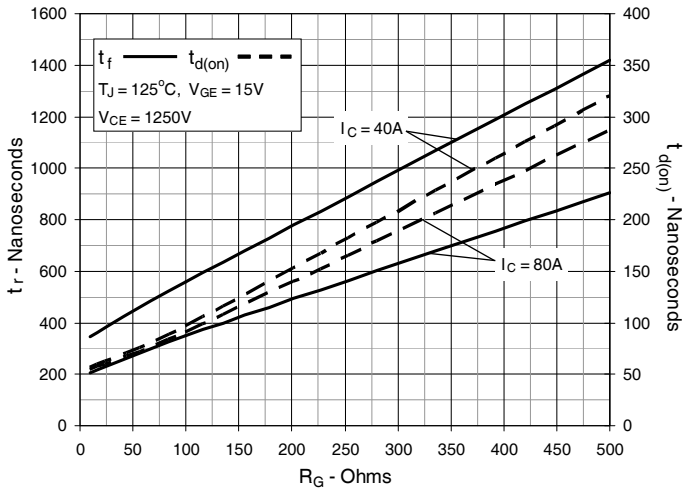


Fig. 15. Resistive Turn-off Switching Times vs. Junction Temperature

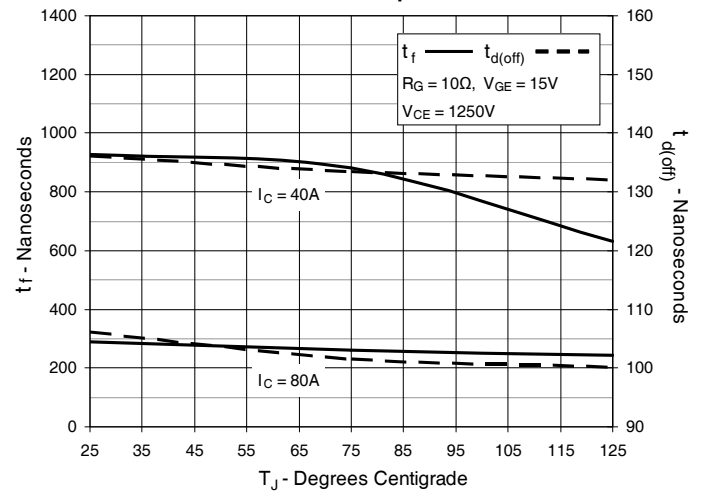


Fig. 16. Resistive Turn-off Switching Times vs. Collector Current

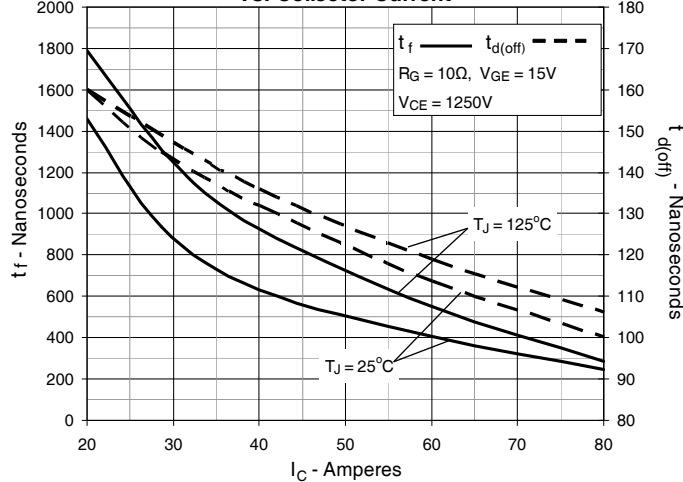


Fig. 17. Resistive Turn-off Switching Times vs. Gate Resistance

