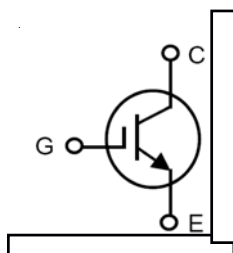
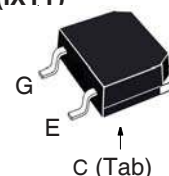
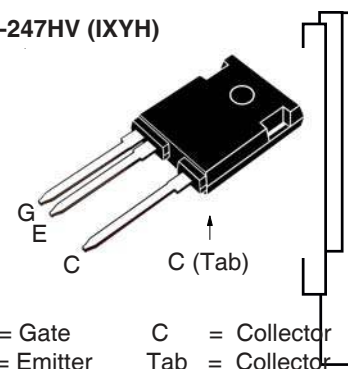


**High Voltage XPT™
IGBT**
**IXYT30N450HV
IXYH30N450HV**

$$V_{CES} = 4500V$$

$$I_{C110} = 30A$$

$$V_{CE(sat)} \leq 3.9V$$


TO-268HV (IXYT)

TO-247HV (IXYH)


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

| Symbol | Test Conditions | Maximum Ratings | |
|-------------------------|--|-----------------------|------------------|
| V_{CES} | $T_C = 25^\circ\text{C}$ to 150°C | 4500 | V |
| V_{CGR} | $T_J = 25^\circ\text{C}$ to 150°C , $R_{GE} = 1M\Omega$ | 4500 | V |
| V_{GES} | Continuous | ± 20 | V |
| V_{GEM} | Transient | ± 30 | V |
| I_{C25} | $T_C = 25^\circ\text{C}$ | 60 | A |
| I_{C110} | $T_C = 110^\circ\text{C}$ | 30 | A |
| I_{CM} | $T_C = 25^\circ\text{C}$, 1ms | 200 | A |
| SSOA (RBSOA) | $V_{GE} = 15V$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 10\Omega$ Clamped Inductive Load | $I_{CM} = 90$ 3600 | A V |
| P_C | $T_C = 25^\circ\text{C}$ | 430 | W |
| T_J | | -55 ... +150 | $^\circ\text{C}$ |
| T_{JM} | | 150 | $^\circ\text{C}$ |
| T_{stg} | | -55 ... +150 | $^\circ\text{C}$ |
| T_L | Maximum Lead Temperature for Soldering | 300 | $^\circ\text{C}$ |
| T_{SOLD} | 1.6 mm (0.062in.) from Case for 10s | 260 | $^\circ\text{C}$ |
| M_d | Mounting Torque (TO-247HV) | 1.13/10 | Nm/lb.in |
| Weight | TO-268HV | 4.0 | g |
| | TO-247HV | 6.0 | g |

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified) | Characteristic Values | | |
|---------------|---|-----------------------|------------|--------------------------|
| | | Min. | Typ. | Max. |
| BV_{CES} | $I_C = 250\mu\text{A}$, $V_{GE} = 0V$ | 4500 | | V |
| $V_{GE(th)}$ | $I_C = 250\mu\text{A}$, $V_{CE} = V_{GE}$ | 3.0 | | 5.0 V |
| I_{CES} | $V_{CE} = V_{CES}$, $V_{GE} = 0V$ $T_J = 125^\circ\text{C}$ | | | 25 μA 1 mA |
| I_{GES} | $V_{CE} = 0V$, $V_{GE} = \pm 20V$ | | | ± 200 nA |
| $V_{CE(sat)}$ | $I_C = 30A$, $V_{GE} = 15V$, Note 1 $T_J = 125^\circ\text{C}$ | | 3.2 4.5 | 3.9 V V |

Features

- High Voltage Packages
- High Blocking Voltage
- High Peak Current Capability
- Low Saturation Voltage

Advantages

- Low Gate Drive Requirement
- High Power Density

Applications

- Switch-Mode and Resonant-Mode Power Supplies
- Uninterruptible Power Supplies (UPS)
- Laser Generators
- Capacitor Discharge Circuits
- AC Switches

| Symbol Test Conditions ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified) | | Characteristic Values | | |
|--|---|--|------|-------------------------|
| | | Min. | Typ. | Max. |
| g_{fs} | $I_C = 30\text{A}, V_{CE} = 10\text{V}$, Note 1 | 11 | 18 | S |
| C_{ies} | $V_{CE} = 25\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$ | | 1840 | pF |
| C_{oes} | | | 83 | pF |
| C_{res} | | | 35 | pF |
| Q_g | $I_C = 30\text{A}, V_{GE} = 15\text{V}, V_{CE} = 1000\text{V}$ | | 88 | nC |
| Q_{ge} | | | 11 | nC |
| Q_{gc} | | | 40 | nC |
| $t_{d(on)}$ | Resistive Switching Times, $T_J = 25^\circ\text{C}$ $I_C = 30\text{A}, V_{GE} = 15\text{V}$ | | 38 | ns |
| t_r | | | 318 | ns |
| $t_{d(off)}$ | | | 168 | ns |
| t_f | | $V_{CE} = 960\text{V}, R_G = 10\Omega$ | 1220 | ns |
| $t_{d(on)}$ | Resistive Switching Times, $T_J = 125^\circ\text{C}$ $I_C = 30\text{A}, V_{GE} = 15\text{V}$ | | 42 | ns |
| t_r | | | 590 | ns |
| $t_{d(off)}$ | | | 180 | ns |
| t_f | | $V_{CE} = 960\text{V}, R_G = 10\Omega$ | 1365 | ns |
| R_{thJC} | | | | 0.29 $^\circ\text{C/W}$ |
| R_{thCS} | TO-247HV | 0.21 | | $^\circ\text{C/W}$ |

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

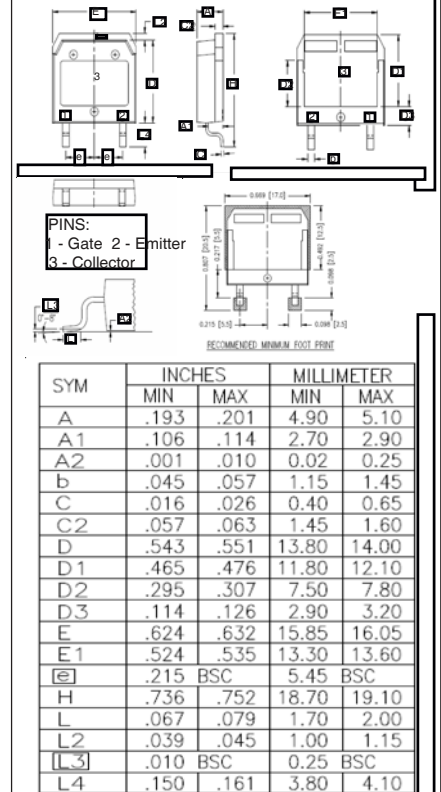
ADVANCE TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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 | |

TO-268HV Outline



TO-247HV Outline

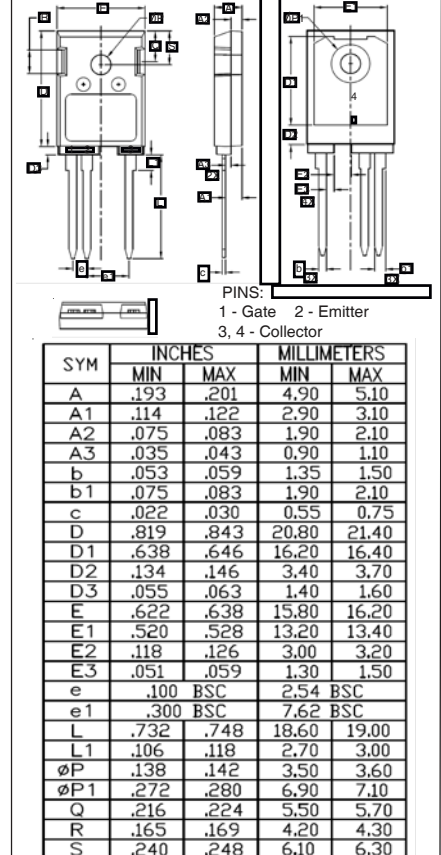


Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

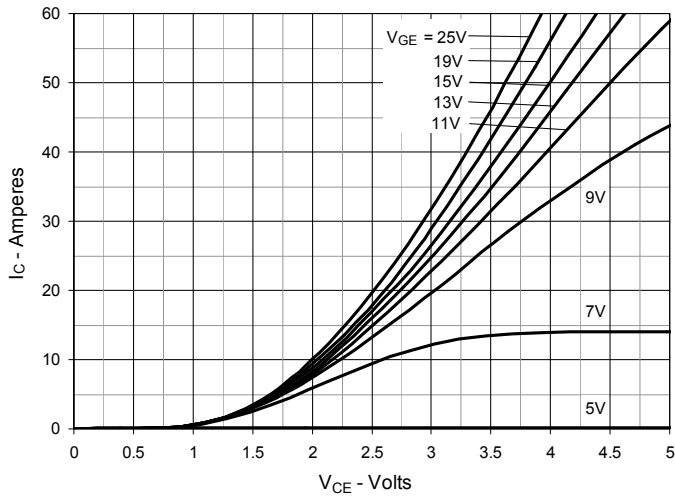


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

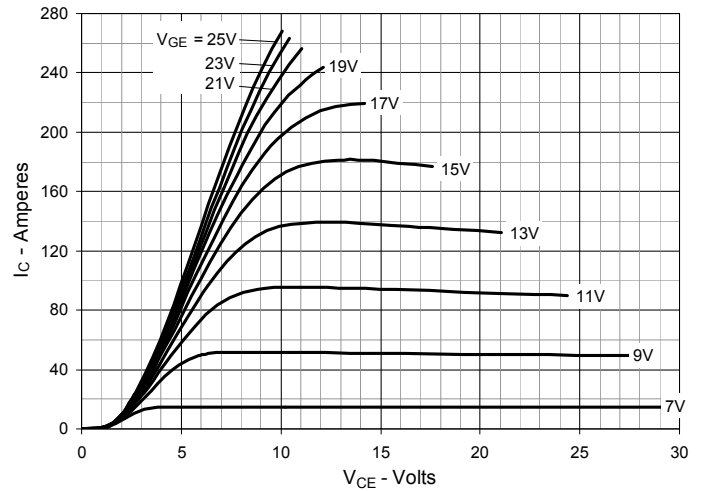


Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

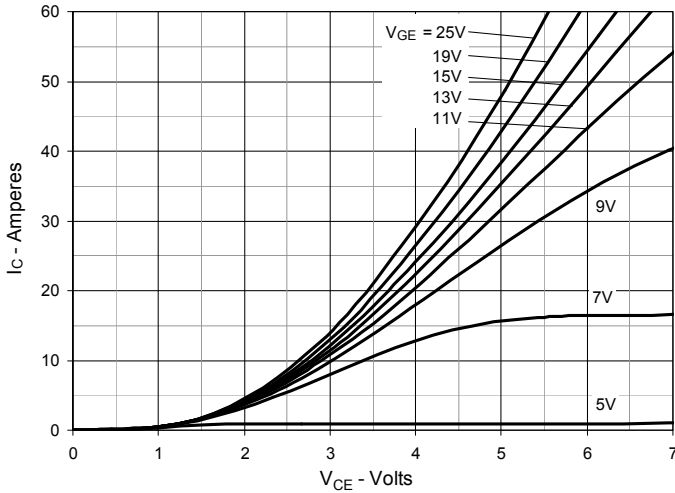


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

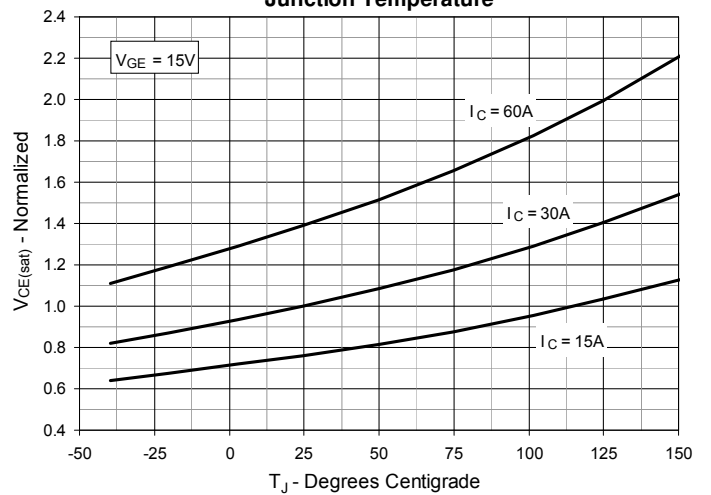


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

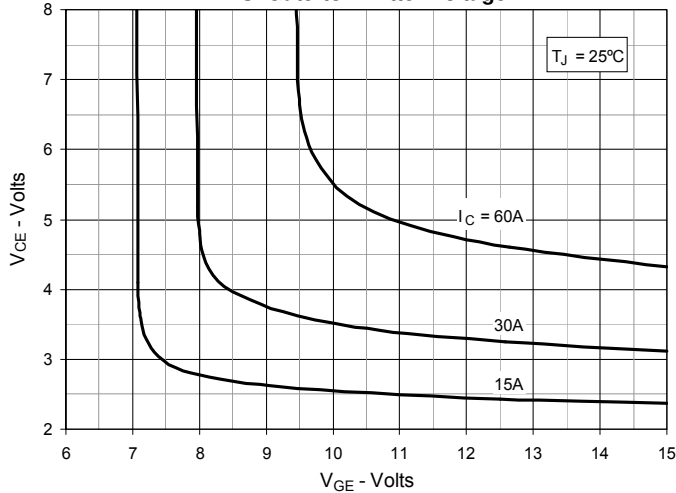


Fig. 6. Input Admittance

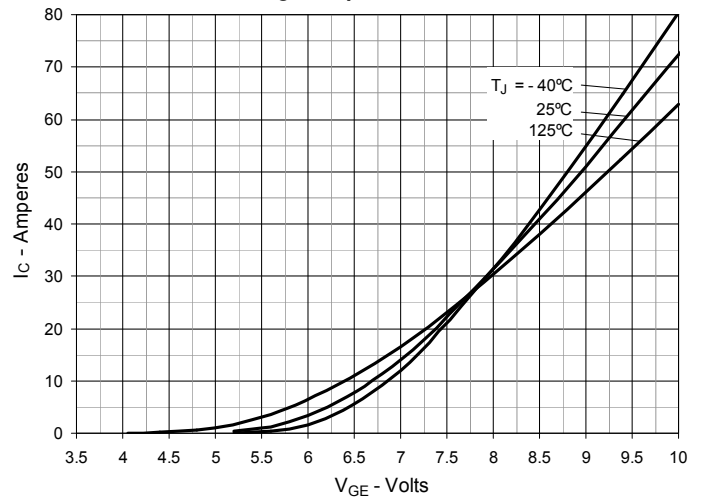


Fig. 7. Transconductance

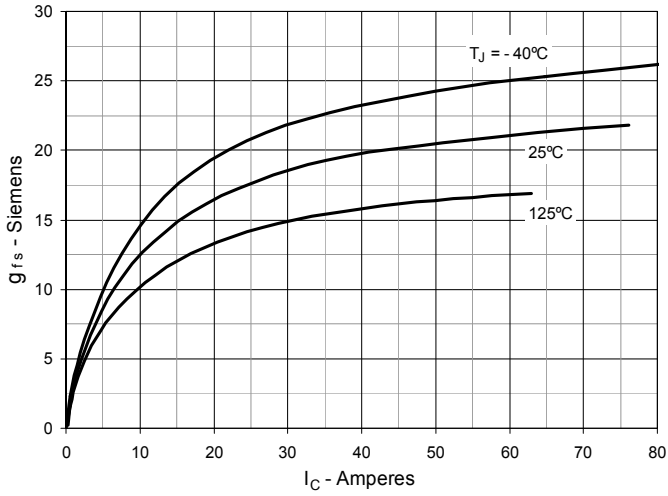


Fig. 8. Gate Charge

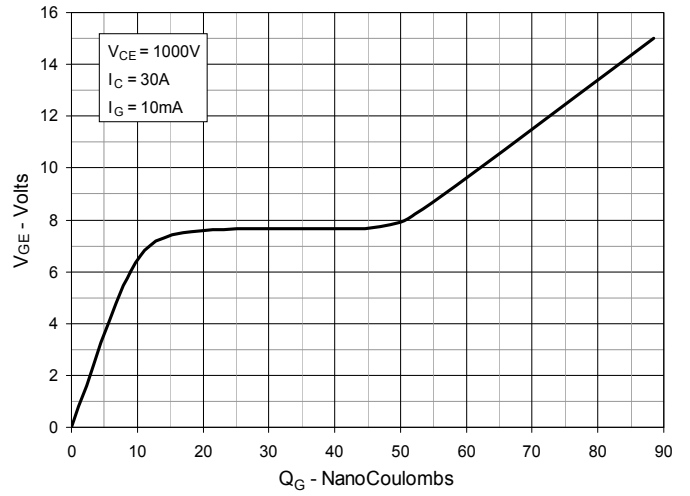


Fig. 9. Capacitance

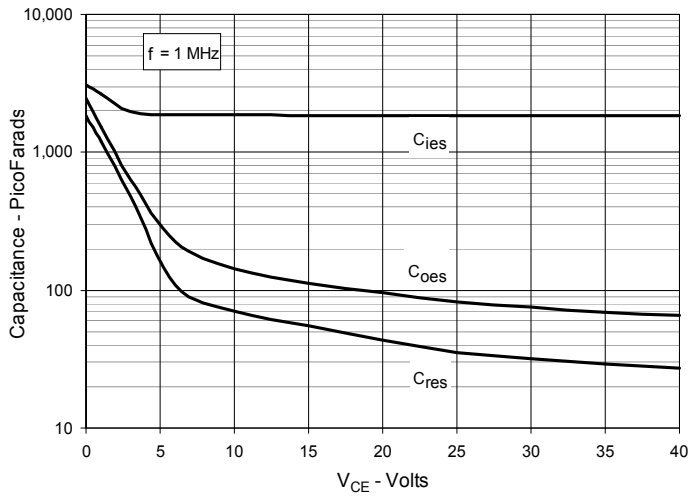


Fig. 10. Reverse-Bias Safe Operating Area

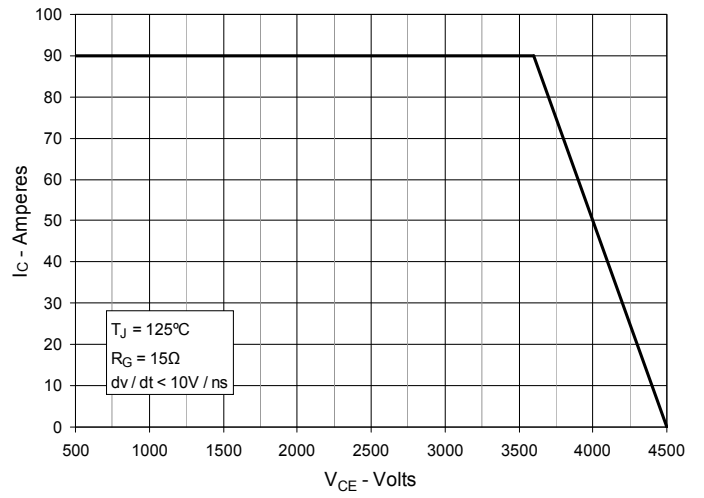
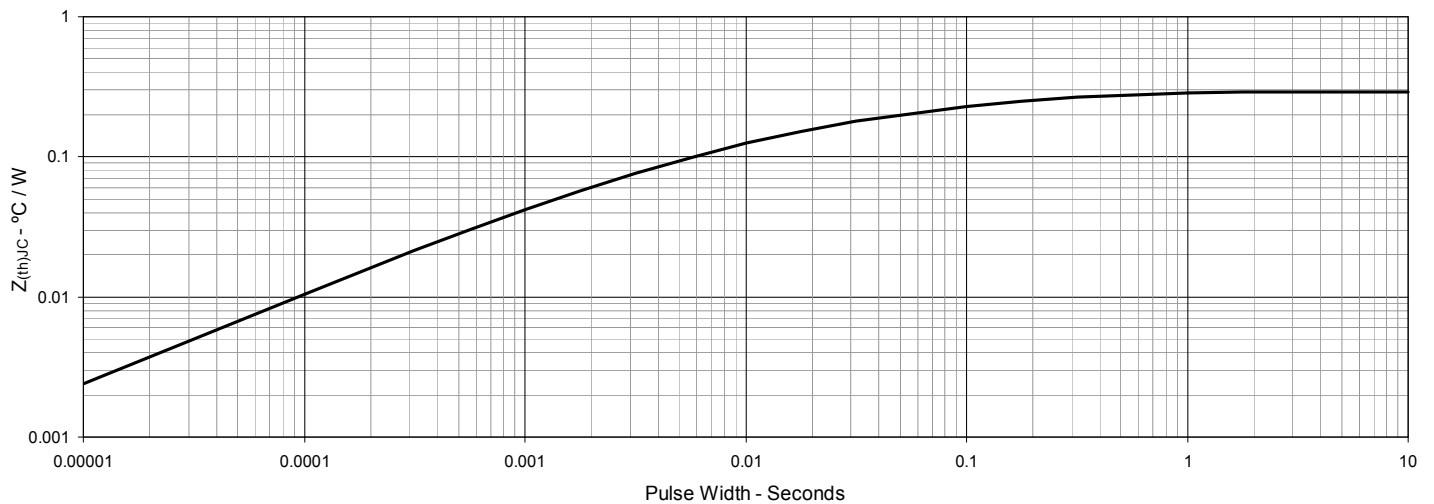


Fig. 11. Maximum Transient Thermal Impedance



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