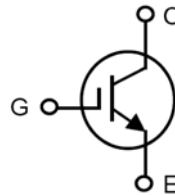


**High Voltage XPT™  
IGBT**
**IXYT30N450HV  
IXYH30N450HV**

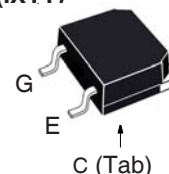
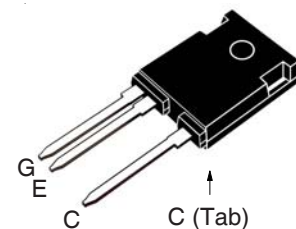
$$V_{CES} = 4500V$$

$$I_{C110} = 30A$$

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



Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_C = 25^\circ\text{C}$ to $150^\circ\text{C}$	4500	V
$V_{CGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ , $R_{GE} = 1M\Omega$	4500	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	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
<b>SSOA (RBSOA)</b>	$V_{GE} = 15V$ , $T_{VJ} = 125^\circ\text{C}$ , $R_G = 10\Omega$ 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
<b>Weight</b>	TO-268HV	4.0	g
	TO-247HV	6.0	g

**TO-268HV (IXYT)**

**TO-247HV (IXYH)**


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

**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.
$BV_{CES}$	$I_C = 250\mu\text{A}$ , $V_{GE} = 0V$	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 $\mu\text{A}$ 1 mA
$I_{GES}$	$V_{CE} = 0V$ , $V_{GE} = \pm 20V$			$\pm 200$ nA
$V_{CE(sat)}$	$I_C = 30A$ , $V_{GE} = 15V$ , Note 1 $T_J = 125^\circ\text{C}$		3.2 4.5	V V

### Symbol Test Conditions

( $T_J = 25^\circ\text{C}$  Unless Otherwise Specified)

### Characteristic Values

		Min.	Typ.	Max.		
$g_{fs}$	$I_C = 30\text{A}, V_{CE} = 10\text{V}, \text{Note 1}$	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	
$t_{d(on)}$	<b>Resistive Switching Times, <math>T_J = 25^\circ\text{C}</math></b> $I_C = 30\text{A}, V_{GE} = 15\text{V}$		38		ns	
$t_r$			318		ns	
$t_{d(off)}$		$V_{CE} = 960\text{V}, R_G = 10\Omega$		168		ns
$t_f$				1220		ns
$t_{d(on)}$	<b>Resistive Switching Times, <math>T_J = 125^\circ\text{C}</math></b> $I_C = 30\text{A}, V_{GE} = 15\text{V}$		42		ns	
$t_r$				590		ns
$t_{d(off)}$		$V_{CE} = 960\text{V}, R_G = 10\Omega$		180		ns
$t_f$				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,  $d < 2\%$ .

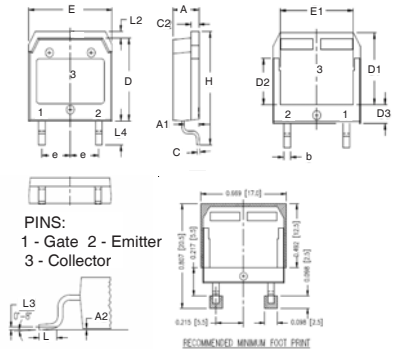
### ADVANCE TECHNICAL INFORMATION

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 7,157,338 B2  
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

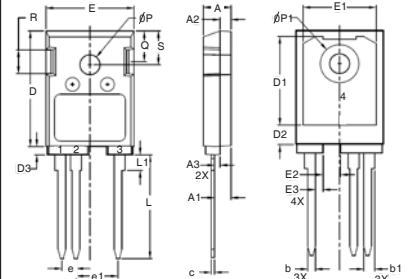
### TO-268HV Outline



PINS:  
1 - Gate 2 - Emitter  
3 - Collector

SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.465	.476	11.80	12.10
D2	.295	.307	7.50	7.80
D3	.114	.126	2.90	3.20
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
E	.215 BSC		5.45 BSC	
H	.736	.752	18.70	19.10
L	.067	.079	1.70	2.00
L2	.039	.045	1.00	1.15
L3	.010 BSC		0.25 BSC	
L4	.150	.161	3.80	4.10

### TO-247HV Outline



PINS:  
1 - Gate 2 - Emitter  
3, 4 - Collector

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A1	.114	.122	2.90	3.10
A2	.075	.083	1.90	2.10
A3	.035	.043	0.90	1.10
b	.053	.059	1.35	1.50
b1	.075	.083	1.90	2.10
c	.022	.030	0.55	0.75
D	.819	.843	20.80	21.40
D1	.638	.646	16.20	16.40
D2	.134	.146	3.40	3.70
D3	.055	.063	1.40	1.60
E	.622	.638	15.80	16.20
E1	.520	.528	13.20	13.40
E2	.118	.126	3.00	3.20
E3	.051	.059	1.30	1.50
e	.100 BSC		2.54 BSC	
e1	.300 BSC		7.62 BSC	
L	.732	.748	18.60	19.00
L1	.106	.118	2.70	3.00
ØP	.138	.142	3.50	3.60
ØP1	.272	.280	6.90	7.10
Q	.216	.224	5.50	5.70
R	.165	.169	4.20	4.30
S	.240	.248	6.10	6.30

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

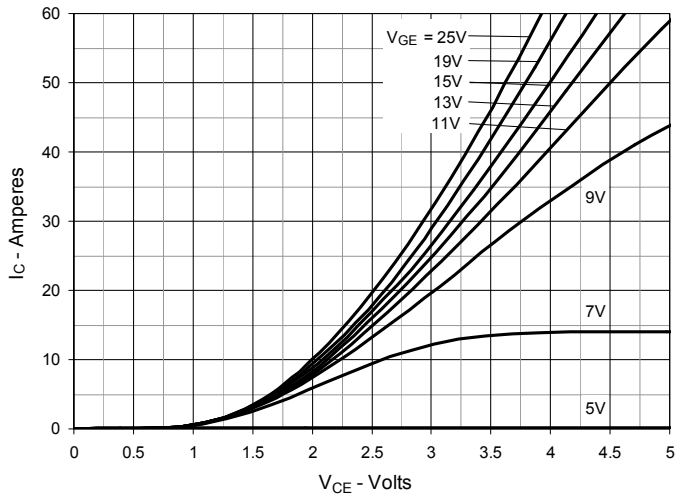


Fig. 2. Extended Output Characteristics @  $T_J = 25^\circ\text{C}$

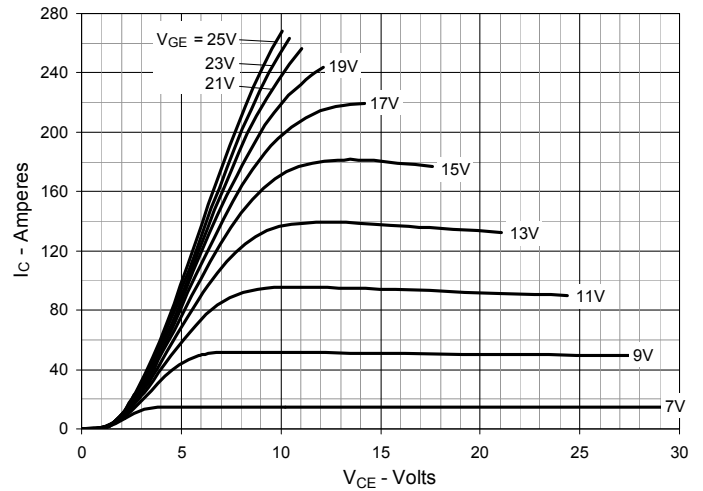


Fig. 3. Output Characteristics @  $T_J = 125^\circ\text{C}$

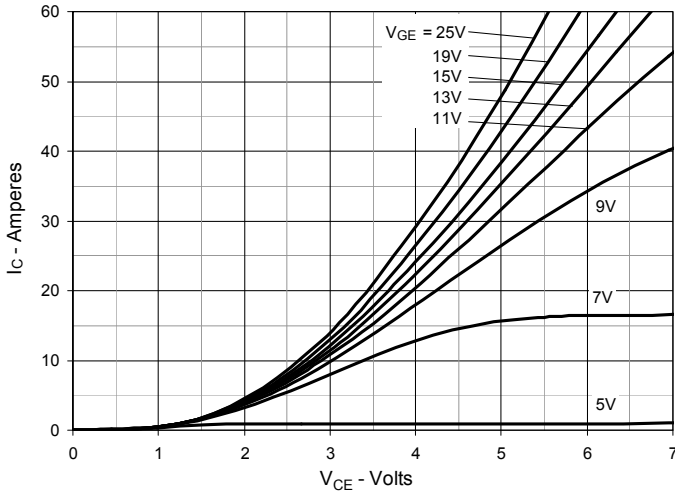


Fig. 4. Dependence of  $V_{CE(sat)}$  on Junction Temperature

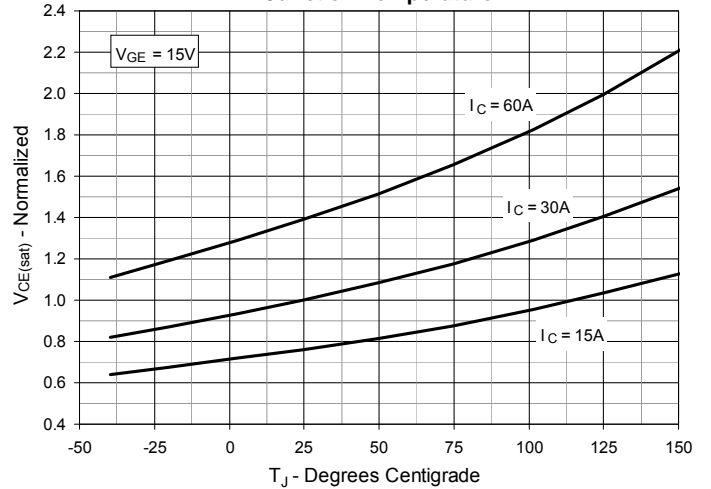


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

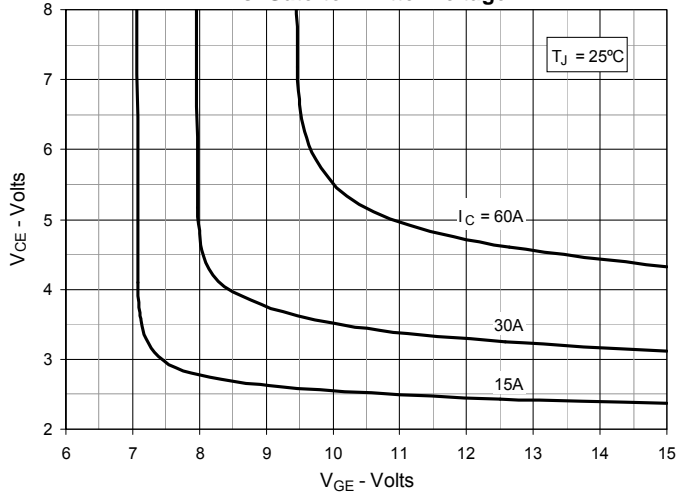
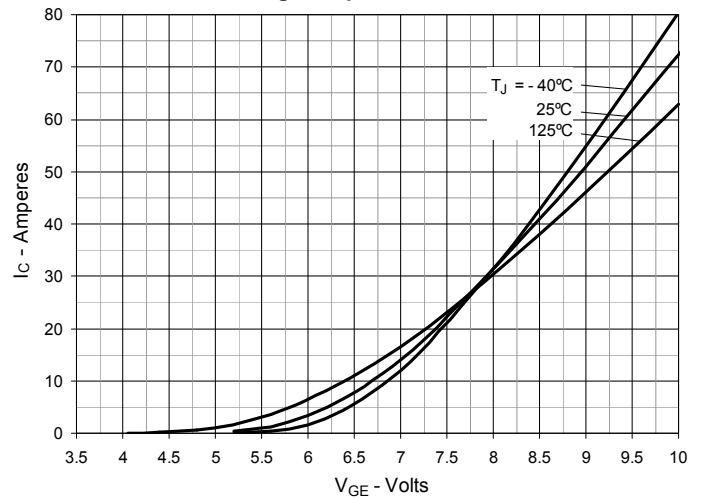
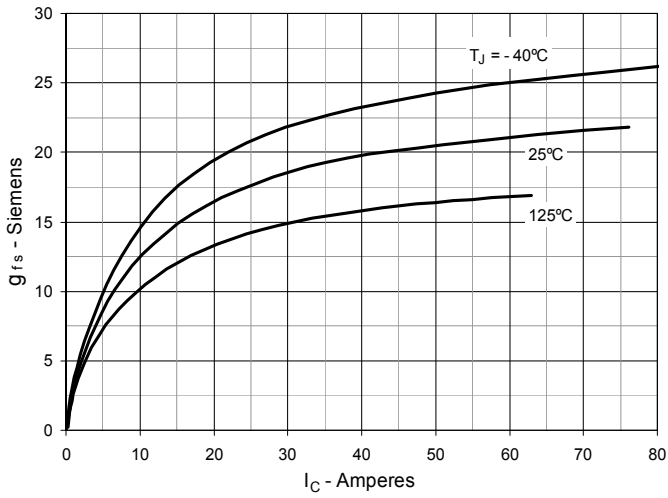


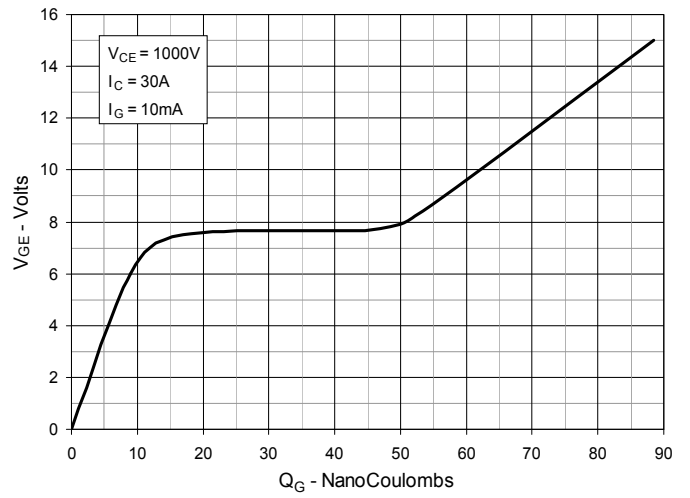
Fig. 6. Input Admittance



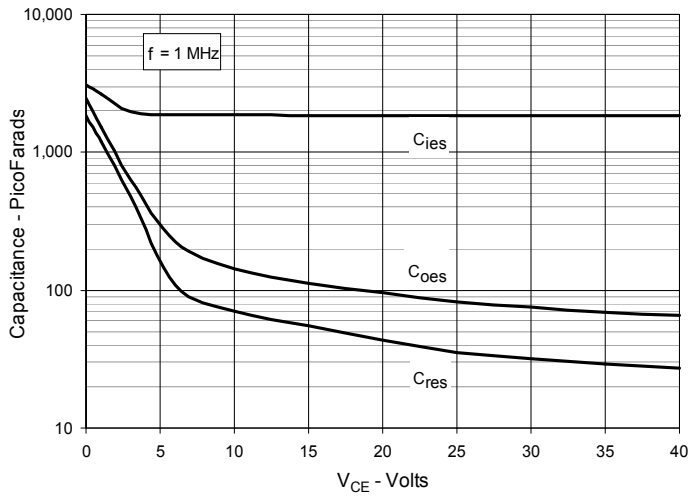
**Fig. 7. Transconductance**



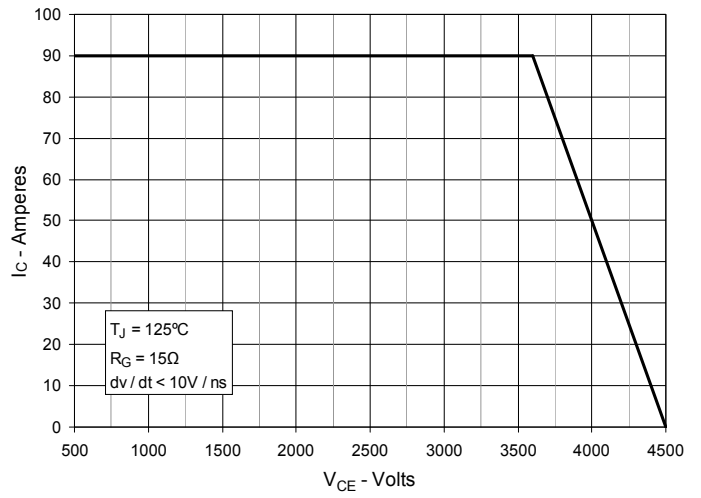
**Fig. 8. Gate Charge**



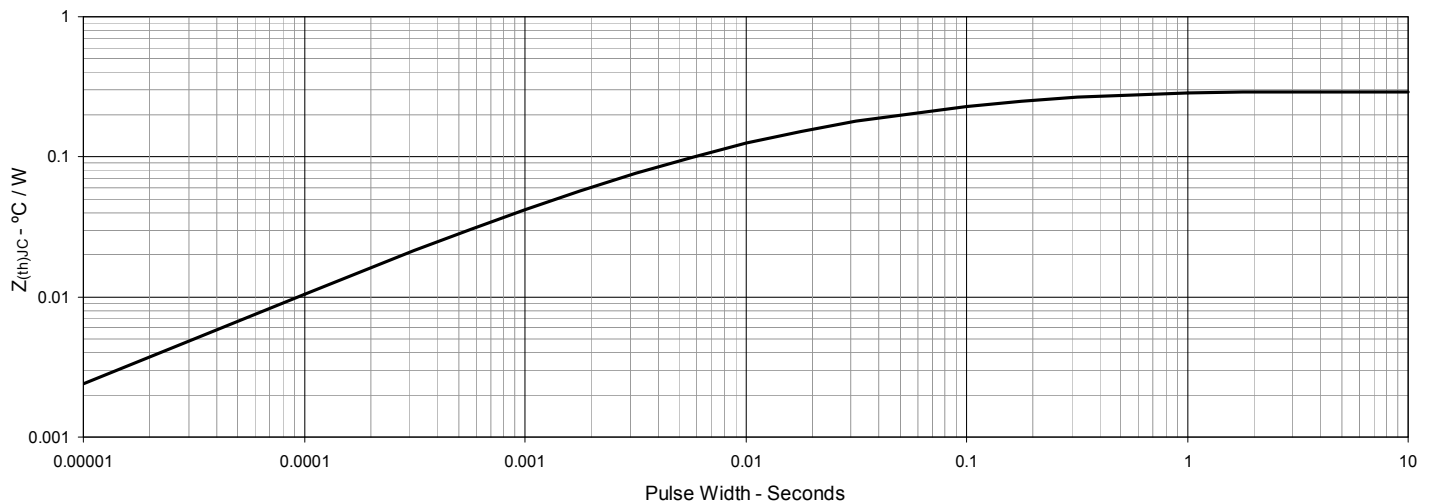
**Fig. 9. Capacitance**



**Fig. 10. Reverse-Bias Safe Operating Area**



**Fig. 11. Maximum Transient Thermal Impedance**



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



---

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at [www.littelfuse.com/disclaimer-electronics](http://www.littelfuse.com/disclaimer-electronics).