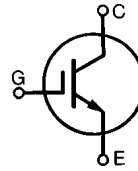


Low  $V_{CE(sat)}$   
High speed IGBT

IXGH/IXGM 25 N100  
IXGH/IXGM 25 N100A

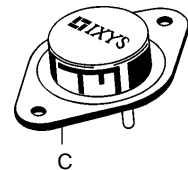
$V_{CES}$	$I_{C25}$	$V_{CE(sat)}$
1000 V	50 A	3.5 V
1000 V	50 A	4.0 V



Symbol	Test Conditions	Maximum Ratings
$V_{CES}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	1000 V
$V_{CGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GE} = 1\text{ M}\Omega$	1000 V
$V_{GES}$	Continuous	$\pm 20$ V
$V_{GEM}$	Transient	$\pm 30$ V
$I_{C25}$	$T_C = 25^\circ\text{C}$	50 A
$I_{C90}$	$T_C = 90^\circ\text{C}$	25 A
$I_{CM}$	$T_C = 25^\circ\text{C}$ , 1 ms	100 A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15\text{ V}$ , $T_{VJ} = 125^\circ\text{C}$ , $R_G = 33\ \Omega$ Clamped inductive load, $L = 100\ \mu\text{H}$	$I_{CM} = 50$ @ $0.8 V_{CES}$
$P_c$	$T_C = 25^\circ\text{C}$	200 W
$T_J$		$-55 \dots +150$ $^\circ\text{C}$
$T_{JM}$		150 $^\circ\text{C}$
$T_{stg}$		$-55 \dots +150$ $^\circ\text{C}$
$M_d$	Mounting torque (M3)	1.13/10 Nm/lb.in.
<b>Weight</b>		TO-204 = 18 g, TO-247 = 6 g
	Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s	300 $^\circ\text{C}$

TO-247 AD (IXGH)

TO-204 AE (IXGM)



G = Gate, E = Emitter, C = Collector, TAB = Collector

### Features

- International standard packages
- 2nd generation HDMOS™ process
- Low  $V_{CE(sat)}$ 
  - for low on-state conduction losses
- High current handling capability
- MOS Gate turn-on
  - drive simplicity
- Voltage rating guaranteed at high temperature ( $125^\circ\text{C}$ )

### Applications

- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

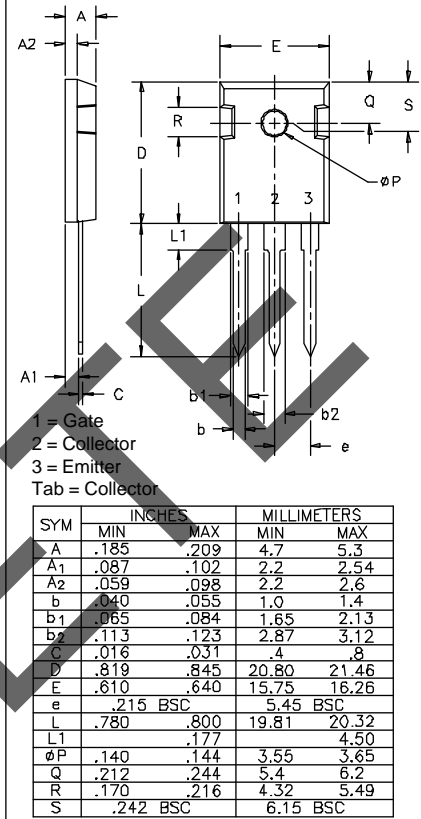
### Advantages

- Easy to mount with 1 screw (TO-247) (isolated mounting screw hole)
- High power density

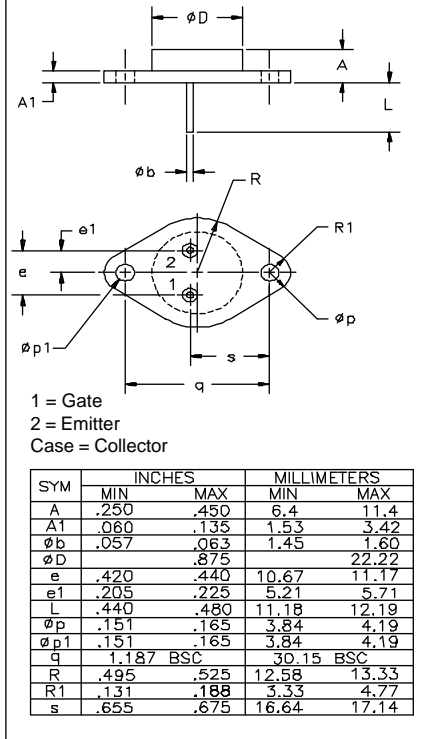
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$BV_{CES}$	$I_C = 3\text{ mA}$ , $V_{GE} = 0\text{ V}$	1000		V
$V_{GE(th)}$	$I_C = 250\ \mu\text{A}$ , $V_{CE} = V_{GE}$	2.5		V
$I_{CES}$	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0\text{ V}$			$T_J = 25^\circ\text{C}$ : 250 $\mu\text{A}$ $T_J = 125^\circ\text{C}$ : 1 mA
$I_{GES}$	$V_{CE} = 0\text{ V}$ , $V_{GE} = \pm 20\text{ V}$			$\pm 100$ nA
$V_{CE(sat)}$	$I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$			25N100: 3.5 V 25N100A: 4.0 V

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)			
		min.	typ.	max.	
$g_{fs}$	$I_C = I_{C90}$ ; $V_{CE} = 10\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $\leq 2\%$	8	15	S	
$C_{ies}$	$V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$		2750	pF	
$C_{oes}$			200	pF	
$C_{res}$			50	pF	
$Q_g$	$I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ , $V_{CE} = 0.5 V_{CES}$		130	nC	
$Q_{ge}$			25	nC	
$Q_{gc}$			55	nC	
$t_{d(on)}$	<b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b> $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ , $L = 300\ \mu\text{H}$ , $V_{CE} = 0.8 V_{CES}$ , $R_G = R_{off} = 33\ \Omega$ Remarks: Switching times may increase for $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$ , higher $T_J$ or increased $R_G$		100	ns	
$t_{ri}$			200	ns	
$t_{d(off)}$			500	ns	
$t_{fi}$		25N100A	500	ns	
$E_{off}$		25N100A	5	mJ	
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ , $L = 300\ \mu\text{H}$ , $V_{CE} = 0.8 V_{CES}$ , $R_G = R_{off} = 33\ \Omega$ Remarks: Switching times may increase for $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$ , higher $T_J$ or increased $R_G$		100	ns	
$t_{ri}$			250	ns	
$E_{on}$			3.5	mJ	
$t_{d(off)}$		25N100	720	1000	ns
$t_{fi}$		25N100A	950	3000	ns
$E_{off}$	25N100	800	1500	ns	
$E_{off}$	25N100A	10	mJ		
$E_{off}$	25N100A	8	mJ		
$R_{thJC}$				0.62 K/W	
$R_{thCK}$				0.25 K/W	

TO-247 AD Outline



TO-204AE Outline



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 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715  
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025

Fig. 1 Saturation Characteristics

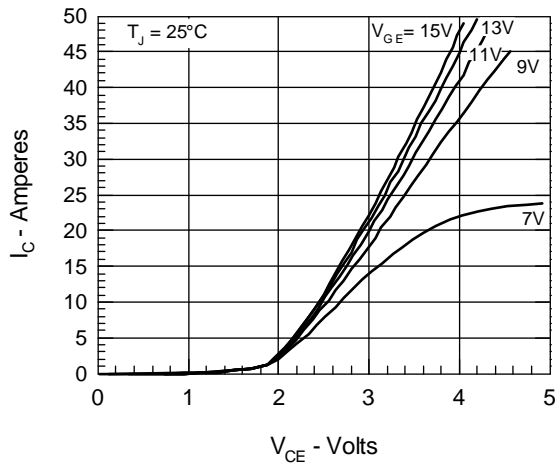


Fig. 2 Output Characteristics

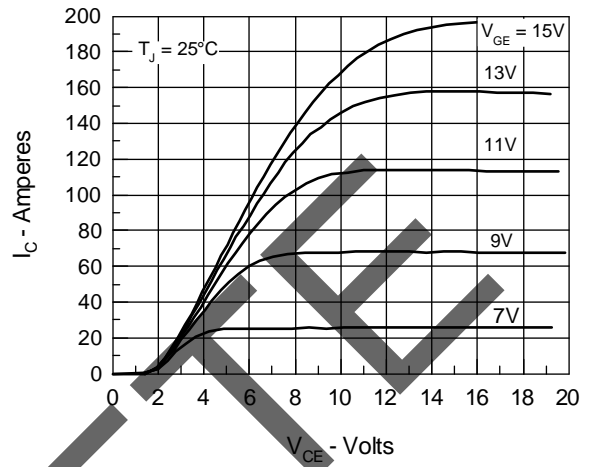


Fig. 3 Collector-Emitter Voltage vs. Gate-Emitter Voltage

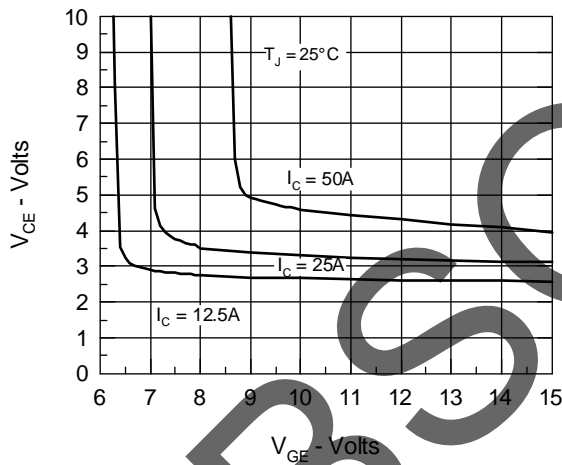


Fig. 4 Temperature Dependence of Output Saturation Voltage

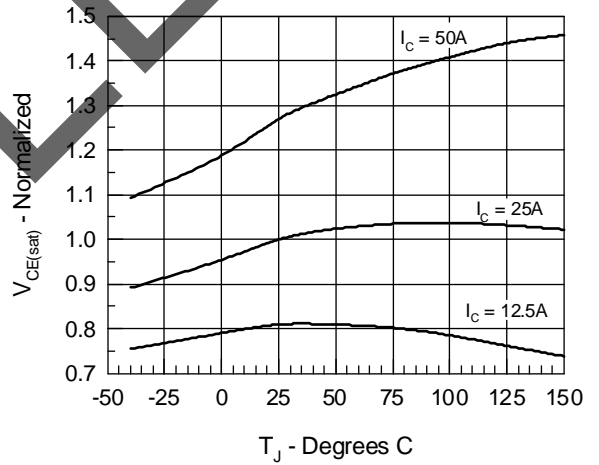


Fig. 5 Input Admittance

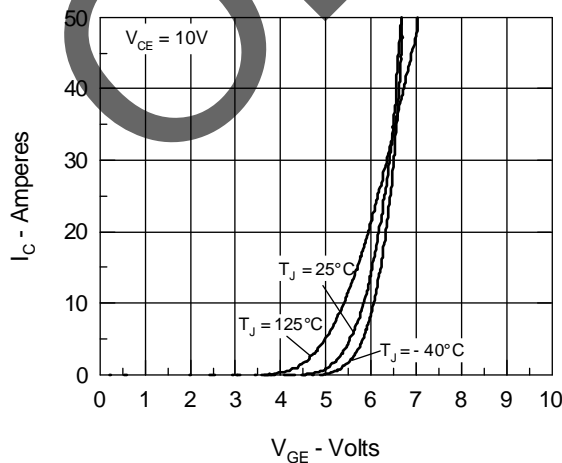


Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage

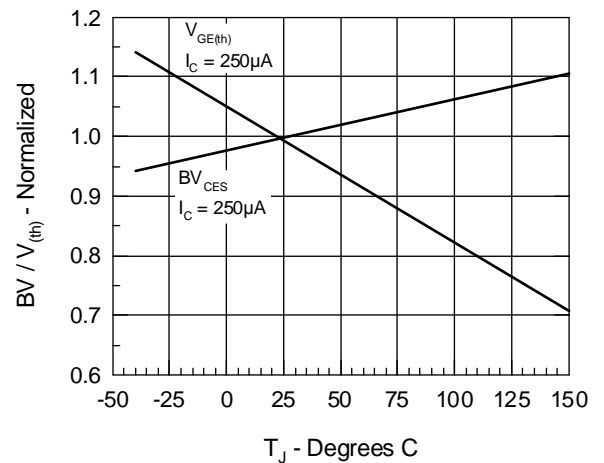


Fig.7 Gate Charge

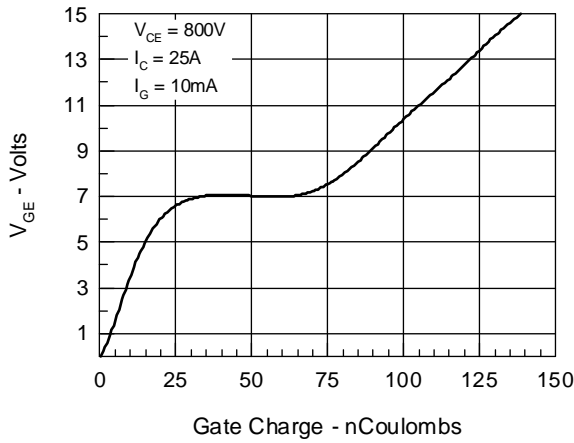


Fig.8 Turn-Off Safe Operating Area

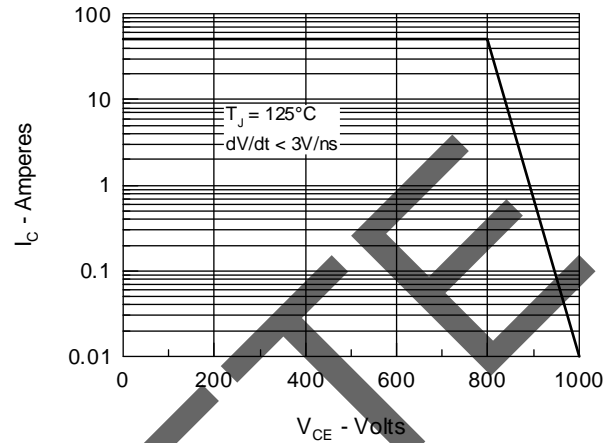


Fig.9 Capacitance Curves

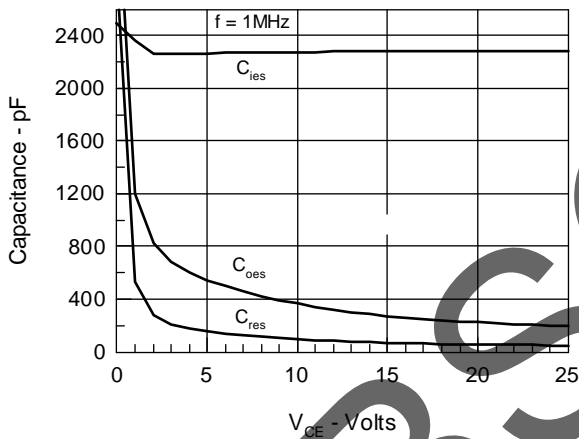
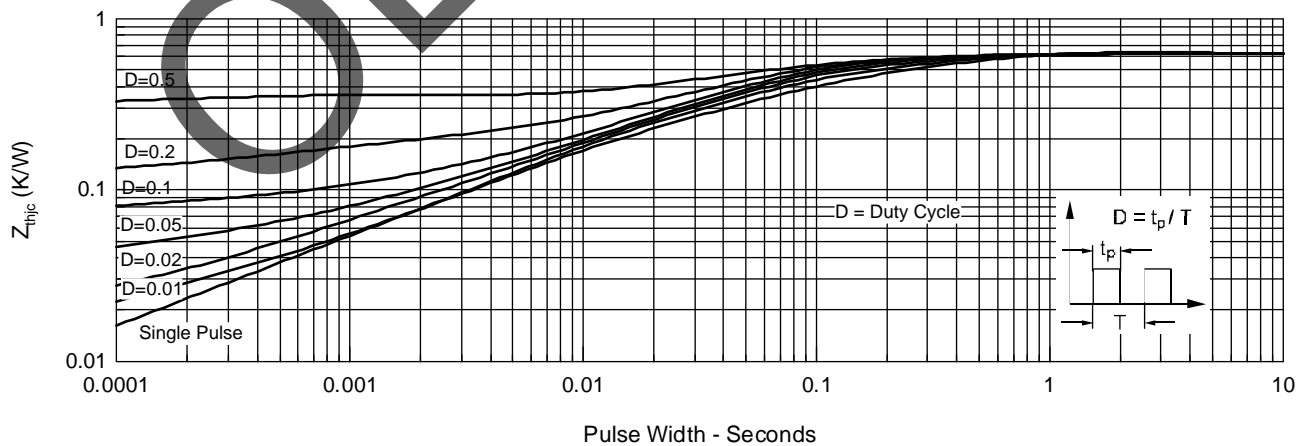


Fig.10 Transient Thermal Impedance



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4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025



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