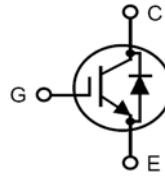


High Voltage BiMOSFET™ IXBH9N160G

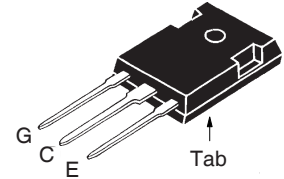
Monolithic Bipolar MOS Transistor

N-Channel, Enhancement Mode MOSFET Transistor



$$\begin{aligned} V_{CES} &= 1600V \\ I_{C25} &= 9A \\ V_{CE(sat)} &\leq 7.0V \\ t_{fi(typ)} &= 70ns \end{aligned}$$

TO-247



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

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1600	V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}, R_{GE} = 1M\Omega$	1600	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	9	A
I_{C90}	$T_C = 90^\circ\text{C}$	5	A
I_{CM}	$T_C = 25^\circ\text{C}, 1\text{ms}$	10	A
SSOA (RBSOA)	$V_{GE} = 10V, T_{VJ} = 125^\circ\text{C}, R_G = 27\Omega$ Clamped Inductive Load	$I_{CM} = 12$	A
		1280	V
P_C	$T_C = 25^\circ\text{C}$	100	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	1.13/10	Nm/lb.in.
Weight		6	g

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{CES}	$I_C = 250\mu\text{A}, V_{GE} = 0V$	1600		V
$V_{GE(th)}$	$I_C = 500\mu\text{A}, V_{CE} = V_{GE}$	3.5		5.5 V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}, V_{GE} = 0V$ $T_J = 125^\circ\text{C}$		100	μA μA
I_{GES}	$V_{CE} = 0V, V_{GE} = \pm 20V$			± 500 nA
$V_{CE(sat)}$	$I_C = 5A, V_{GE} = 15V$, Note 1 $T_J = 125^\circ\text{C}$		4.9 5.6	V V

Features

- High Voltage Package
 - Replaces High Voltage Darlington's and Series Connected MOSFETs
 - Lower Effective $R_{DS(on)}$
- MOS Gate turn-on
 - Drive Simplicity
 - MOSFET Compatible for 10V turn on Gate Voltage
- Monolithic construction
 - High Blocking Voltage Capability
 - Very Fast turn-off Characteristics
- International Standard Package
 - Reverse Conducting Capability

Advantages

- Low Gate Drive Requirement
- High Power Density

Applications

- Flyback Converters
- DC Choppers
- Uninterruptible Power Supplies (UPS)
- Switched-Mode & Resonant-Mode Power Supplies
- CRT Deflection
- Lamp Ballasts

Symbol Test Conditions $(T_J = 25^\circ\text{C}$ Unless Otherwise Specified)**Characteristic Values****Min. Typ. Max.**

C_{ies}	} $V_{CE} = 25\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$	550	pF
C_{oes}		36	pF
C_{res}		5	pF
$Q_{g(on)}$	$I_C = 5\text{A}, V_{GE} = 10\text{V}, V_{CE} = 600\text{V}$	34	nC
$t_{d(on)}$	} Inductive load, $T_J = 125^\circ\text{C}$ $I_C = 5\text{A}, V_{GE} = 10\text{V}$ $V_{CE} = 960\text{V}, R_G = 27\Omega$ Note 2	140	ns
t_{ri}		200	ns
$t_{d(off)}$		120	ns
t_{fi}		70	ns
R_{thJC}			1.25 $^\circ\text{C/W}$
R_{thCS}		0.21	$^\circ\text{C/W}$

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

Symbol	Test Conditions	Min.	Typ.	Max.
V_F	$I_F = 5\text{A}, V_{GE} = 0\text{V},$ Note 1		3.6	5.0 V

Notes:

1. Pulse test, $t \leq 300\mu\text{s}$, duty cycle, $d \leq 2\%$.
2. Switching times & energy losses may increase for higher $V_{CE}(\text{clamp})$, T_J or R_G .

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	

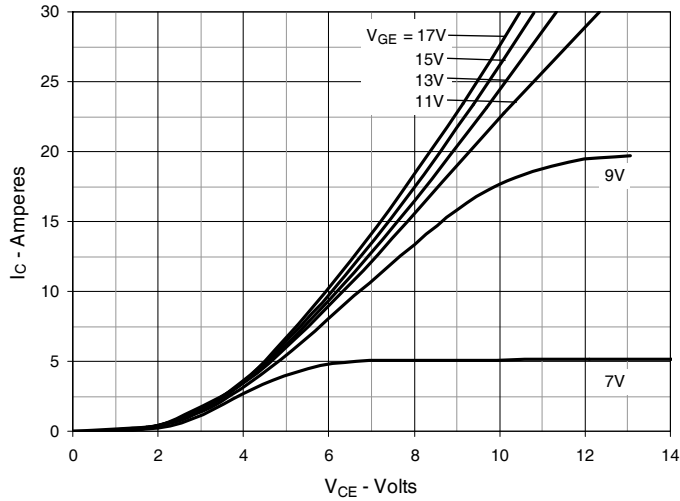
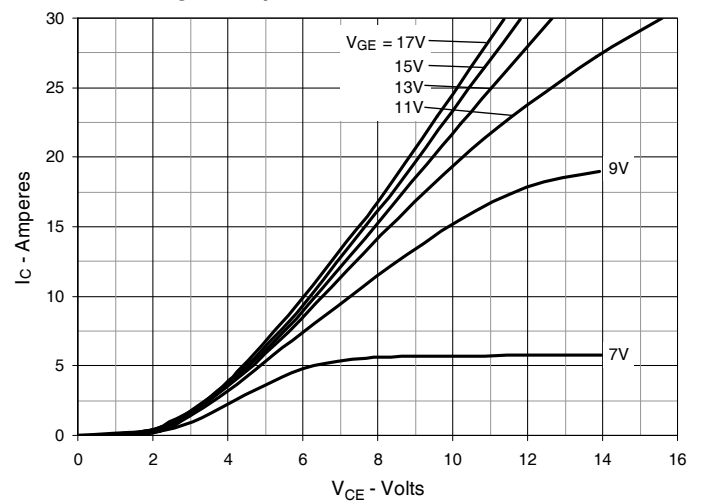
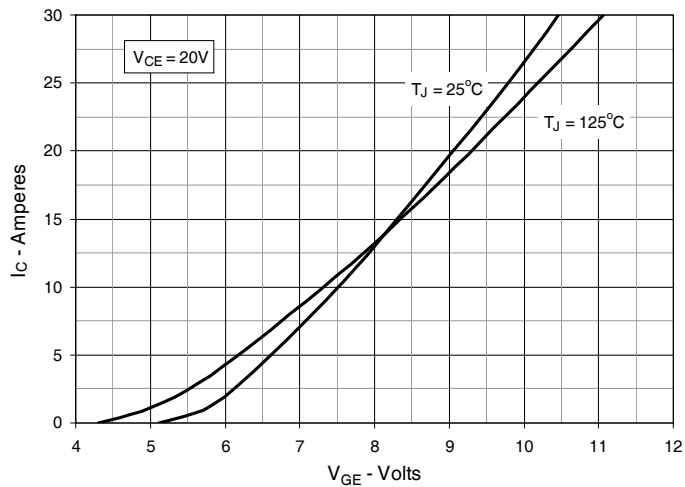
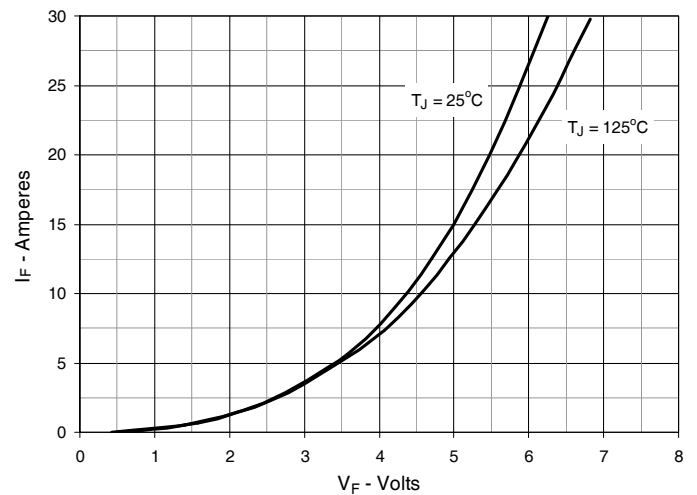
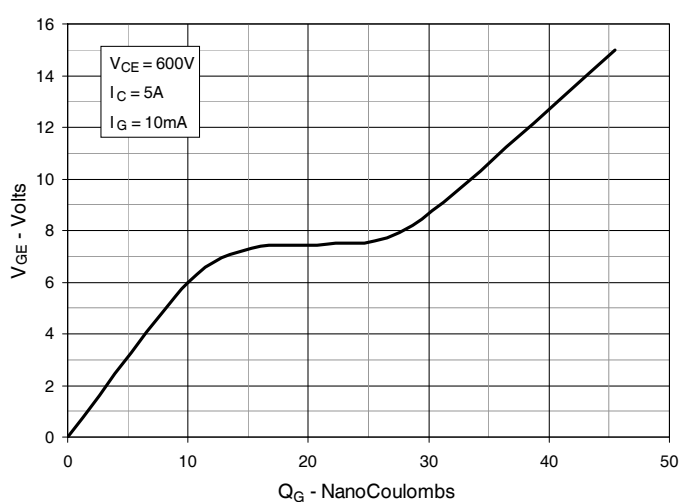
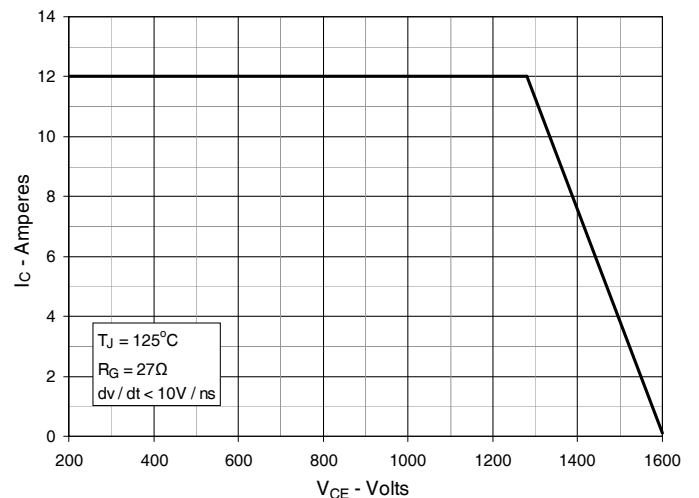
Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

Fig. 2. Output Characteristics @ $T_J = 125^\circ\text{C}$

Fig. 3. Transfer Characteristics

Fig. 4. Forward Voltage Drop of Intrinsic Diode

Fig. 5. Gate Charge

Fig. 6. Reverse-Bias Safe Operating Area


Fig. 7. Inductive Switching Fall Time

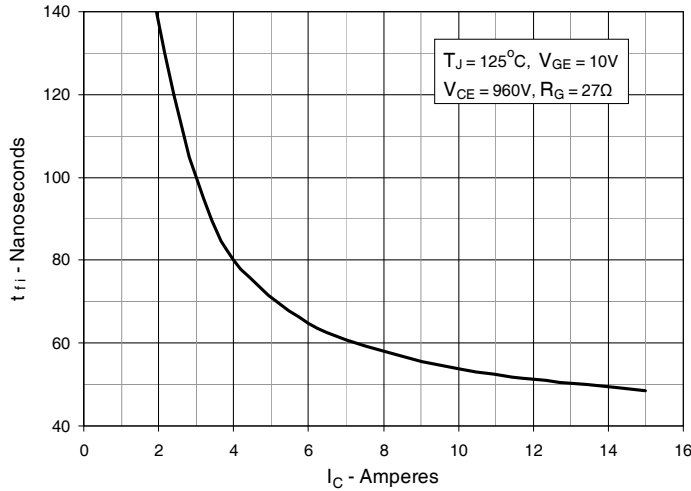


Fig. 8. Inductive Turn-off Delay Time

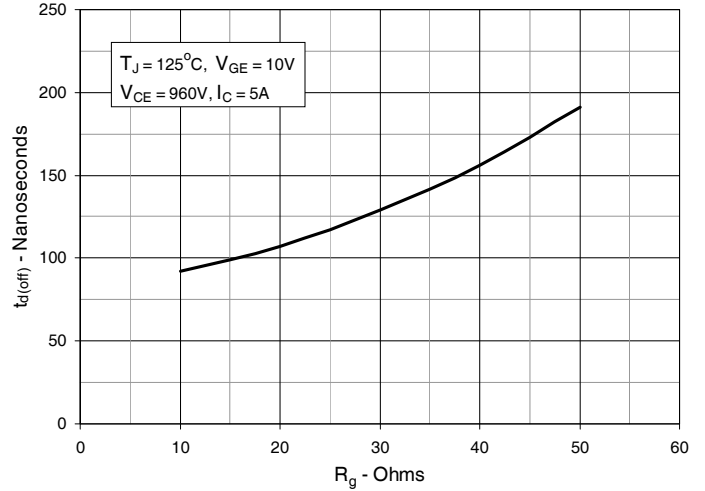


Fig. 9. Maximum Transient Thermal Impedance

