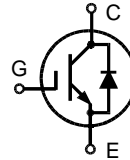


High Voltage BIMOSFET™ Monolithic Bipolar MOS Transistor

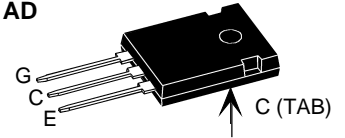
N-Channel, Enhancement Mode

IXBH 40N140
IXBH 40N160

V_{CES} = 1400/1600 V
I_{C25} = 33 A
V_{CE(sat)} = 6.2 V_{typ.}
t_{fi} = 40 ns



TO-247 AD



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

Symbol	Conditions	Maximum Ratings		
		40N140	40N160	
V _{CES}	T _J = 25°C to 150°C	1400	1600	V
V _{CGR}	T _J = 25°C to 150°C; R _{GE} = 1 MΩ	1400	1600	V
V _{GES}	Continuous		±20	V
V _{GEM}	Transient		±30	V
I _{C25}	T _C = 25°C,		33	A
I _{C90}	T _C = 90°C		20	A
I _{CM}	T _C = 25°C, 1 ms		40	A
SSOA (RBSOA)	V _{GE} = 15 V, T _{VJ} = 125°C, R _G = 22 Ω V _{CE} = 0.8 • V _{GES} Clamped inductive load, L = 100 μH		I _{CM} = 40	A
P _C	T _C = 25°C		350	W
T _J		-55 ... +150		°C
T _{JM}			150	°C
T _{stg}		-55 ... +150		°C
T _L	1.6 mm (0.063 in) from case for 10 s		300	°C
M _d	Mounting torque	1.15/10		Nm/lb.in.
Weight			6	g

Features

- International standard package JEDEC TO-247 AD
- High Voltage BIMOSFET™
 - replaces high voltage Darlingtons and series connected MOSFETs
 - lower effective R_{DS(on)}
- Monolithic construction
 - high blocking voltage capability
 - very fast turn-off characteristics
- MOS Gate turn-on
 - drive simplicity
- Intrinsic diode

Applications

- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies
- CRT deflection
- Lamp ballasts

Advantages

- Easy to mount with 1 screw (isolated mounting screw hole)
- Space savings
- High power density

Symbol	Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
BV _{CES}	I _C = 1 mA, V _{GE} = 0 V	40N140 40N160	1400 1600	V
V _{GE(th)}	I _C = 2 mA, V _{CE} = V _{GE}		4	8 V
I _{CES}	V _{CE} = 0.8 • V _{CES} V _{GE} = 0 V	T _J = 25°C T _J = 125°C		400 μA 3 mA
I _{GES}	V _{CE} = 0 V, V _{GE} = ±20 V			± 500 nA
V _{CE(sat)}	I _C = I _{C90} , V _{GE} = 15 V	T _J = 125°C	6.2	7.1 V 7.8 V

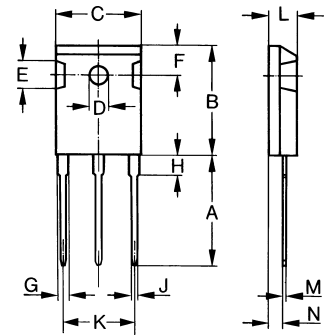
IXYS reserves the right to change limits, test conditions and dimensions.

Symbol	Conditions	Characteristic Values		
		(T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
C _{ies}	V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz		3300	pF
C _{oes}			220	pF
C _{res}			30	pF
Q _g	I _C = 20 A, V _{CE} = 600 V, V _{GE} = 15 V		130	nC
t _{d(on)}	Inductive load, T_J = 125°C I _C = I _{C90°} , V _{GE} = 15 V, L = 100 μH, V _{CE} = 960 V, R _G = 22 Ω		200	ns
t _{ri}			60	ns
t _{d(off)}			270	ns
t _{fi}			40	ns
R _{thJC}				0.35 K/W
R _{thCK}		0.25		K/W

Reverse Conduction **Characteristic Values**
(T_J = 25°C, unless otherwise specified)

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V _F	I _F = I _{C90°} , V _{GE} = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %		2.5	V

TO-247 AD Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102

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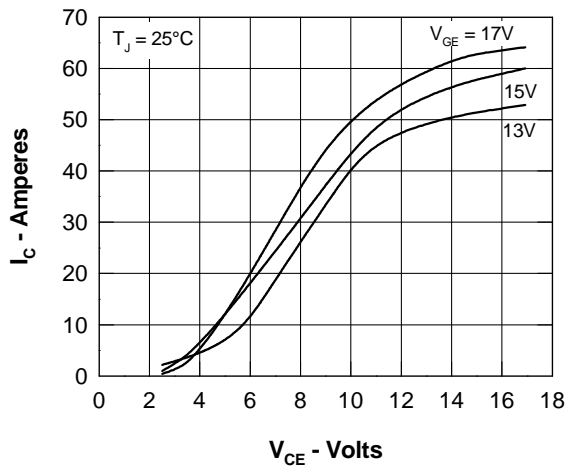


Fig. 1 Typ. Output Characteristics

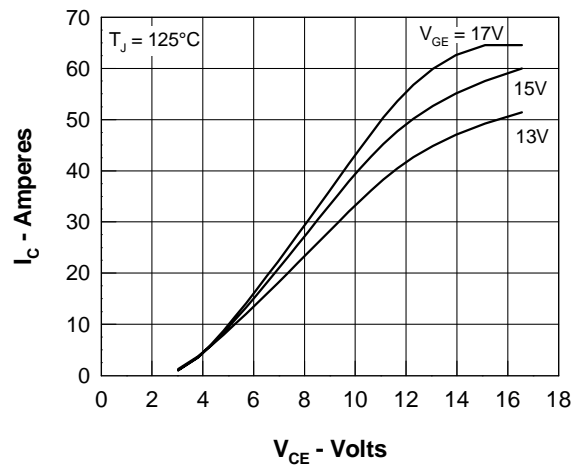


Fig. 2 Typ. Output Characteristics

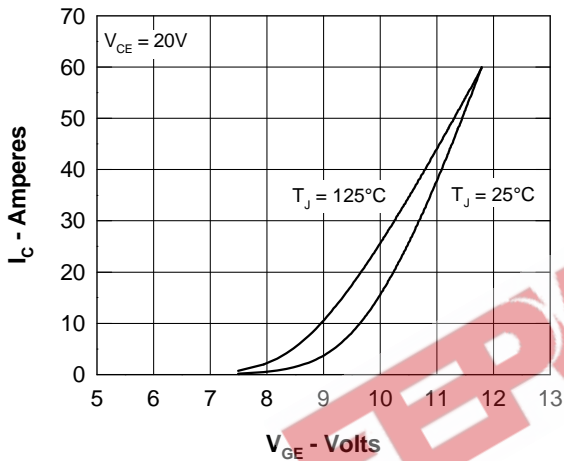


Fig. 3 Typ. Transfer Characteristics

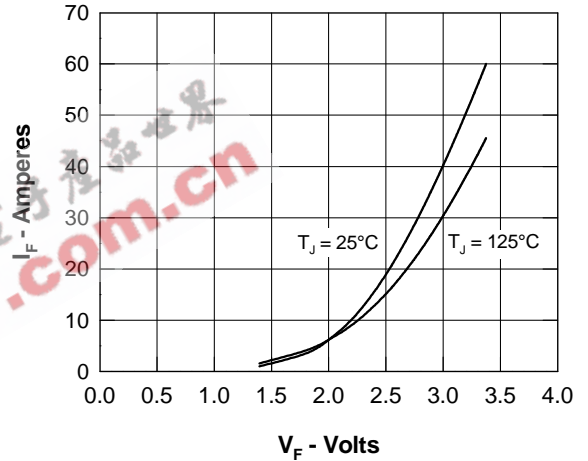


Fig. 4 Typ. Characteristics of Reverse Conduction

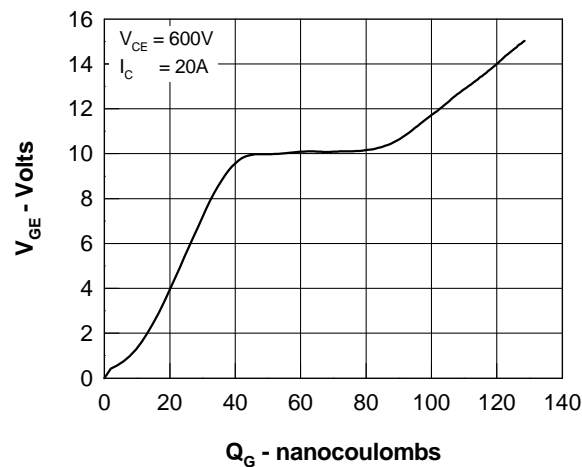


Fig. 5 Typ. Gate Charge characteristics

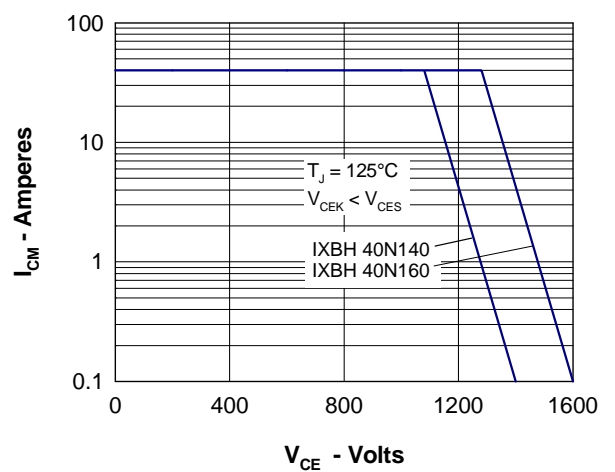


Fig. 6 Reverse Based Safe Operating Area RBSOA

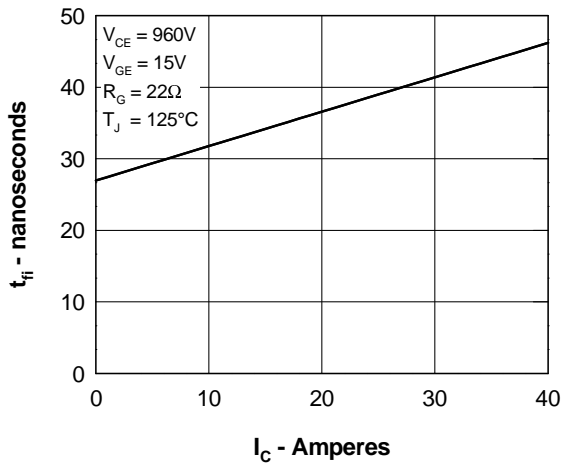


Fig. 7 Typ. Fall Time

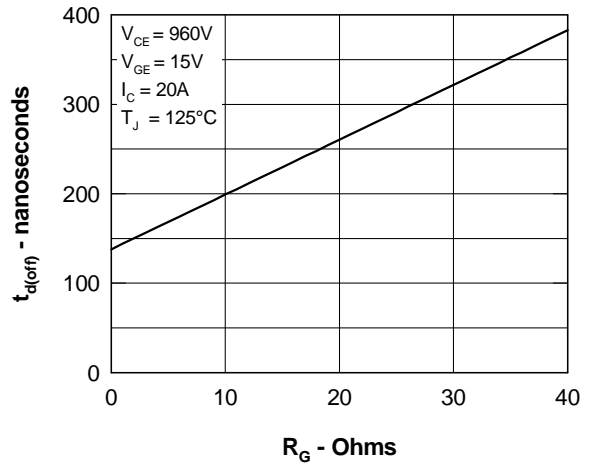


Fig. 8 Typ. Turn Off Delay Time

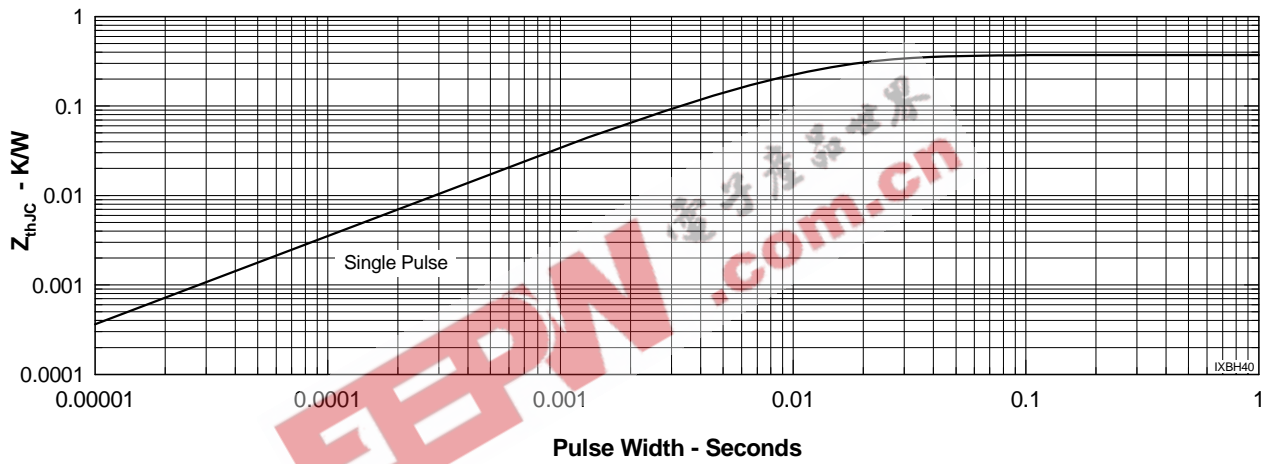


Fig. 9 Typ. Transient Thermal Impedance