

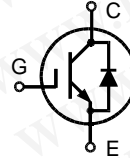
## High Voltage BIMOSFET™ Monolithic Bipolar MOS Transistor

N-Channel, Enhancement Mode

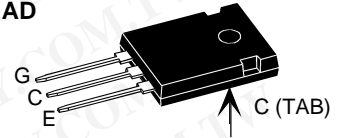
**IXBH 40N140**  
**IXBH 40N160**

**V<sub>CES</sub> = 1400/1600 V**  
**I<sub>C25</sub> = 33 A**  
**V<sub>CE(sat)</sub> = 6.2 V typ.**  
**t<sub>fi</sub> = 40 ns**

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
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TO-247 AD



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

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

### Features

- International standard package JEDEC TO-247 AD
- High Voltage BIMOSFET™
  - replaces high voltage Darlington and series connected MOSFETs
  - lower effective R<sub>DS(on)</sub>
- 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

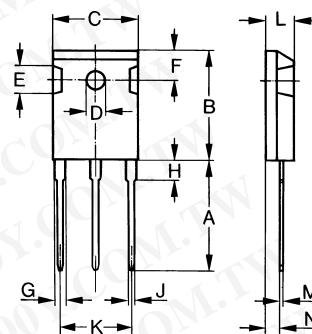
- Easy to mount with 1 screw (isolated mounting screw hole)
- Space savings
- High power density

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

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

Symbol	Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$C_{ies}$	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		3300	pF
$C_{oes}$			220	pF
$C_{res}$			30	pF
$Q_g$	$I_C = 20\text{ A}, V_{CE} = 600\text{ V}, V_{GE} = 15\text{ V}$		130	nC
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = I_{C90}, V_{GE} = 15\text{ V}, L = 100\ \mu\text{H},$ $V_{CE} = 960\text{ V}, R_G = 22\ \Omega$		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

### 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

Symbol	Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_F$	$I_F = I_{C90}, V_{GE} = 0\text{ V},$ Pulse test, $t \leq 300\ \mu\text{s},$ duty cycle $d \leq 2\%$		2.5	5 V

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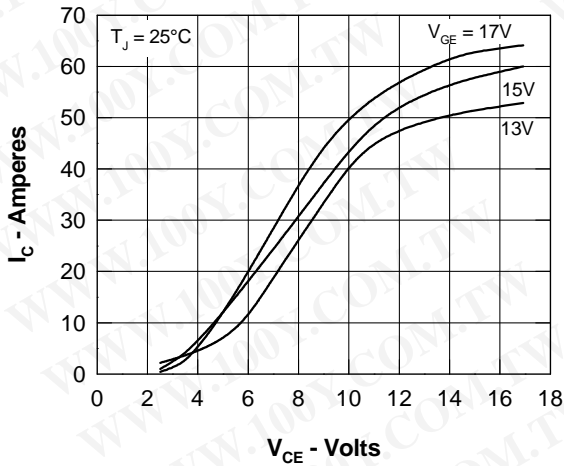


Fig. 1 Typ. Output Characteristics

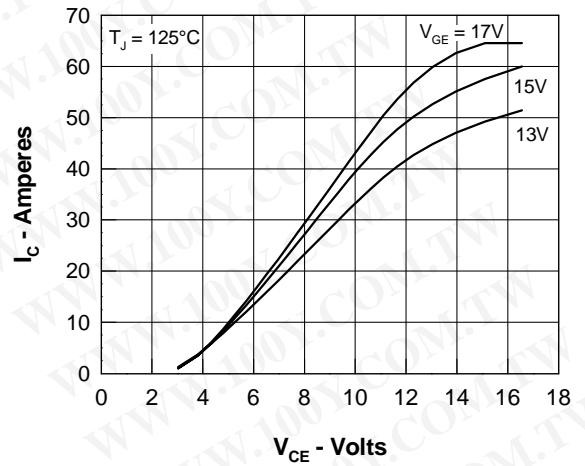


Fig. 2 Typ. Output Characteristics

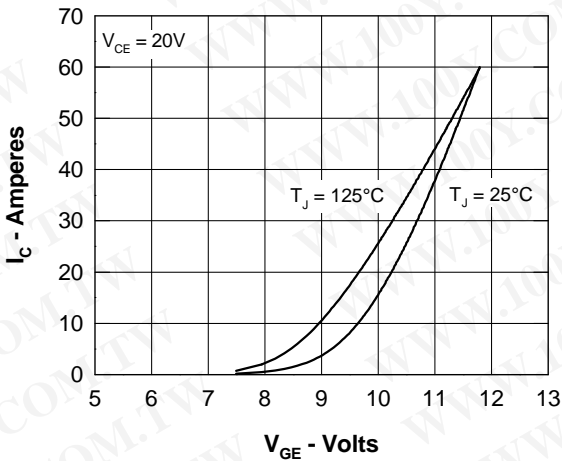


Fig. 3 Typ. Transfer Characteristics

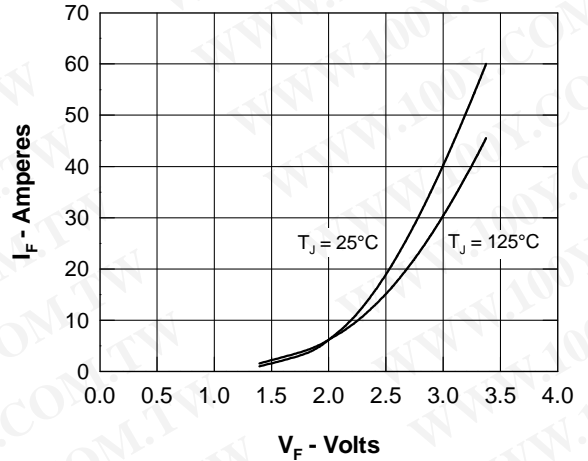


Fig. 4 Typ. Characteristics of Reverse Conduction

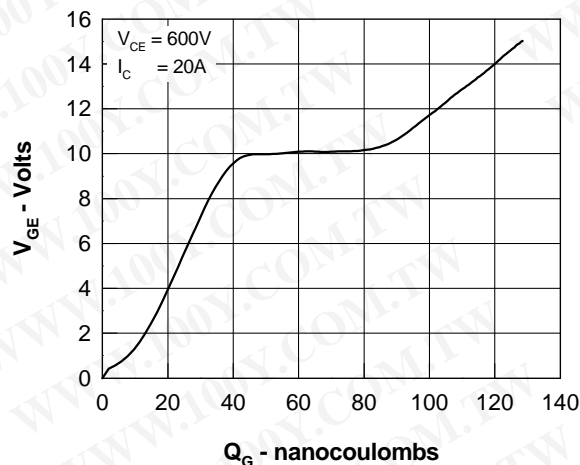


Fig. 5 Typ. Gate Charge characteristics

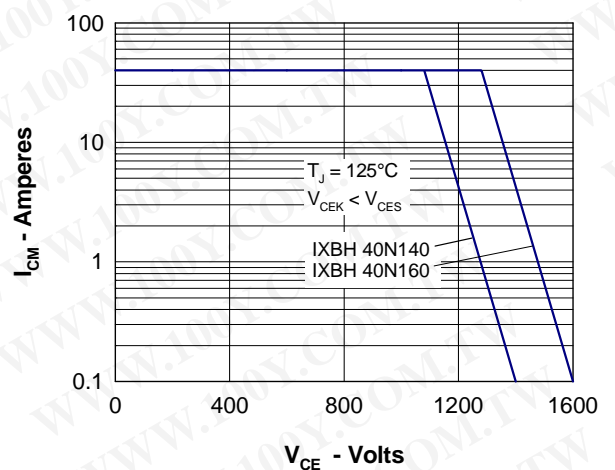


Fig. 6 Reverse Based Safe Operating Area RBSOA

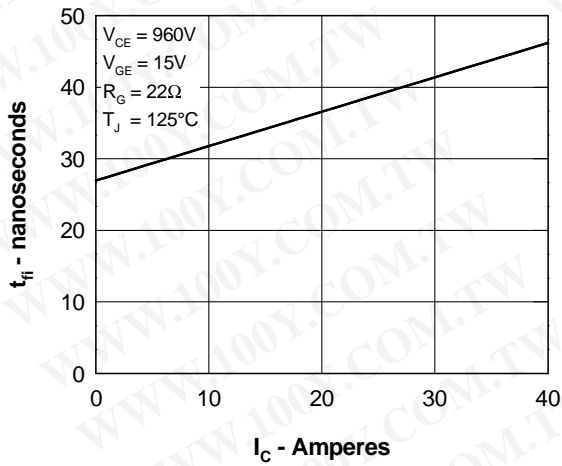


Fig. 7 Typ. Fall Time

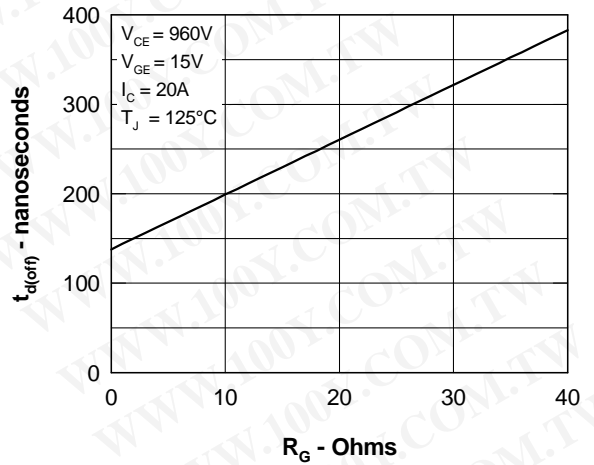


Fig. 8 Typ. Turn Off Delay Time

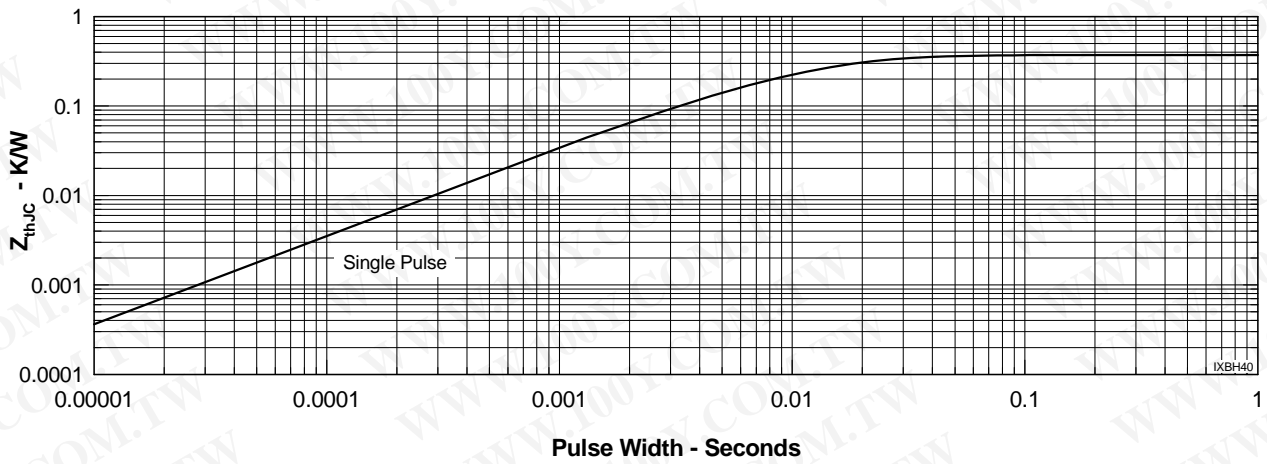


Fig. 9 Typ. Transient Thermal Impedance

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