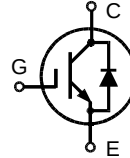


High Voltage BIMOSFET™ Monolithic Bipolar MOS Transistor

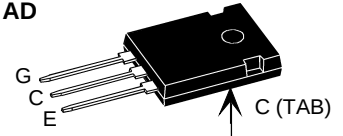
N-Channel, Enhancement Mode

IXBH 20N140
IXBH 20N160

$V_{CES} = 1400/1600 \text{ V}$
 $I_{C25} = 20 \text{ A}$
 $V_{CE(sat)} = 4.7 \text{ V typ.}$
 $t_{fi} = 40 \text{ ns}$



TO-247 AD



G = Gate,
E = Emitter,

C = Collector,
TAB = Collector

Symbol	Conditions	Maximum Ratings		
		20N140	20N160	
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	1400	1600	V
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 1 \text{ M}\Omega$	1400	1600	V
V_{GES}	Continuous		± 20	V
V_{GEM}	Transient		± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$,		20	A
I_{C90}	$T_C = 90^\circ\text{C}$		13	A
I_{CM}	$T_C = 25^\circ\text{C}$, 1 ms		26	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 27 \Omega$, $V_{CE} = 0.8 \cdot V_{CES}$, Clamped inductive load, $L = 100 \mu\text{H}$		$I_{CM} = 24$	A
P_C	$T_C = 25^\circ\text{C}$		200	W
T_J		-55 ... +150		$^\circ\text{C}$
T_{JM}			150	$^\circ\text{C}$
T_{stg}		-55 ... +150		$^\circ\text{C}$
T_L	1.6 mm (0.063 in) from case for 10 s		300	$^\circ\text{C}$
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 Darlington's 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
- Reverse conducting capability

Applications

- Flyback converters
- DC choppers
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies
- CRT deflection
- Lamp ballasts

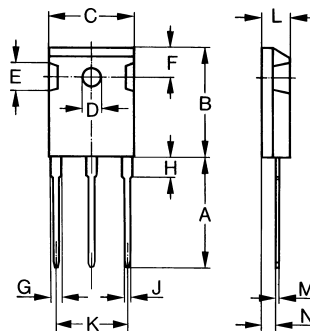
Symbol	Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)			
			min.	typ.	max.
BV_{CES}	$I_C = 1 \text{ mA}$, $V_{GE} = 0 \text{ V}$	20N140 20N160	1400 1600		V V
$V_{GE(th)}$	$I_C = 1.5 \text{ mA}$, $V_{CE} = V_{GE}$		4		8 V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$			300 μA 1 mA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$				$\pm 500 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}$, $V_{GE} = 15 \text{ V}$	$T_J = 125^\circ\text{C}$		4.7 5.4	6.5 V V

Advantages

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

Symbol	Conditions	Characteristic Values ($T_j = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		2100	pF
C_{oes}			140	pF
C_{res}			20	pF
Q_g	$I_C = 13\text{ A}, V_{CE} = 600\text{ V}, V_{GE} = 15\text{ V}$		60	nC
$t_{d(on)}$	Inductive load, $T_j = 125^\circ\text{C}$ $I_C = I_{C90}, V_{GE} = 15\text{ V}, L = 100\text{ }\mu\text{H},$ $V_{CE} = 960\text{ V}, R_G = 27\text{ }\Omega$		200	ns
t_{ri}			60	ns
$t_{d(off)}$			180	ns
t_{fi}			40	ns
R_{thJC}				0.6 K/W
R_{thCK}			0.25	K/W

Symbol	Conditions	Characteristic Values ($T_j = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_F	$I_F = I_{C90}, V_{GE} = 0\text{ V}$		3.6	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

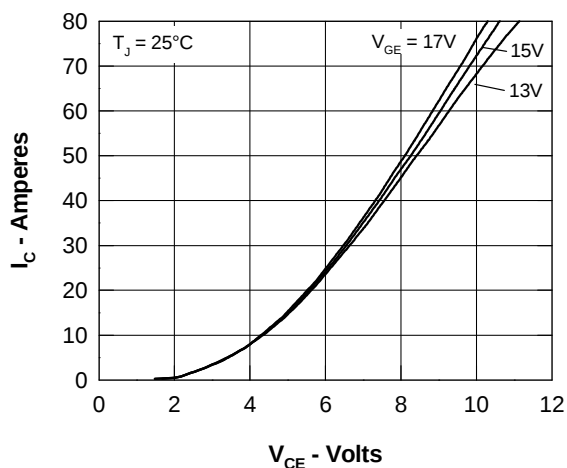


Fig. 1 Typ. Output Characteristics

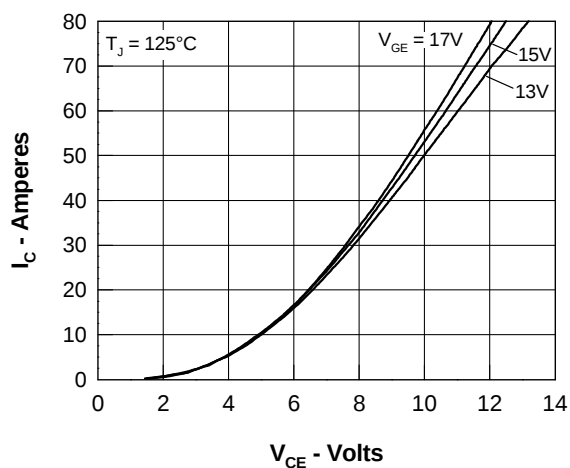


Fig. 2 Typ. Output Characteristics

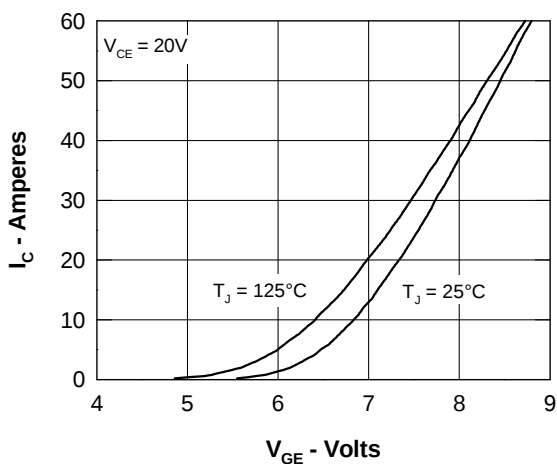


Fig. 3 Typ. Transfer Characteristics

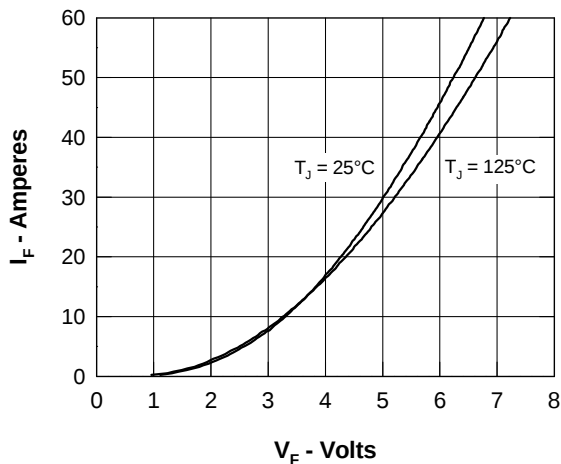


Fig. 4 Typ. Characteristics of Reverse Conduction

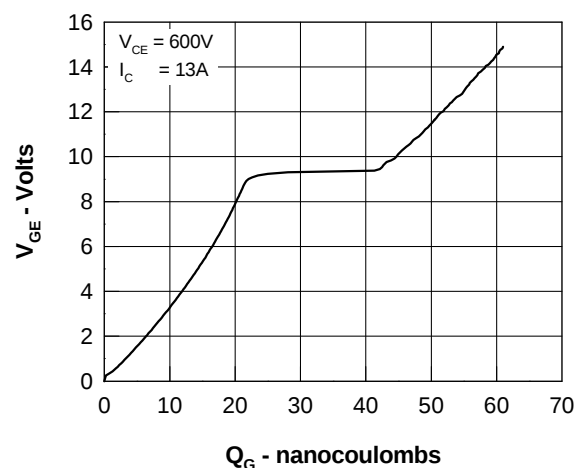


Fig. 5 Typ. Gate Charge characteristics

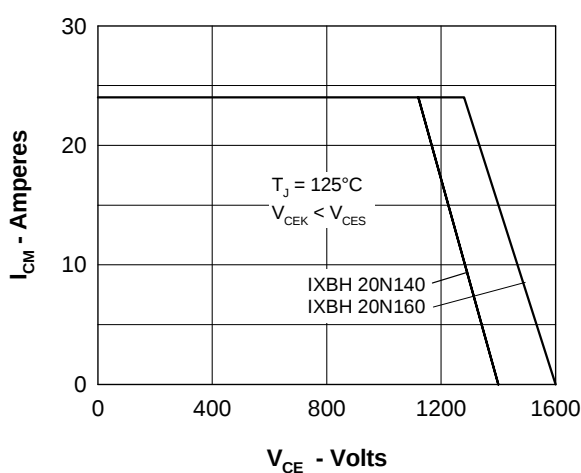


Fig. 6 Reverse Biased Safe Operating Area RBSOA

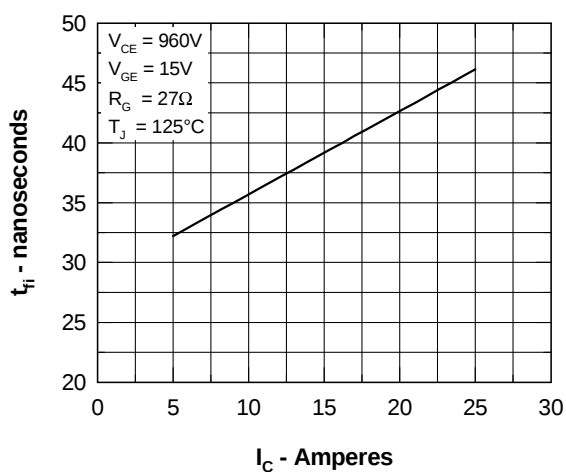


Fig. 7 Typ. Fall Time

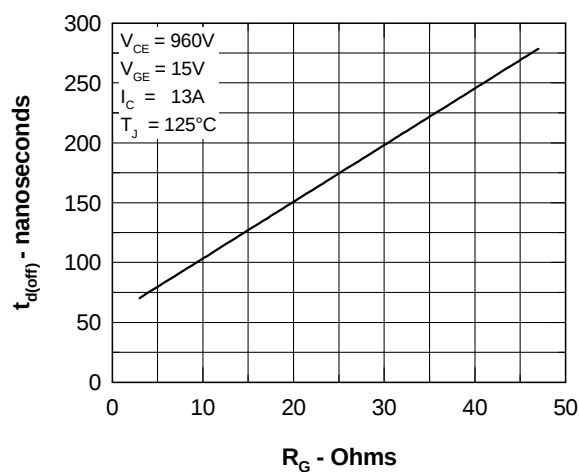


Fig. 8 Typ. Turn Off Delay Time

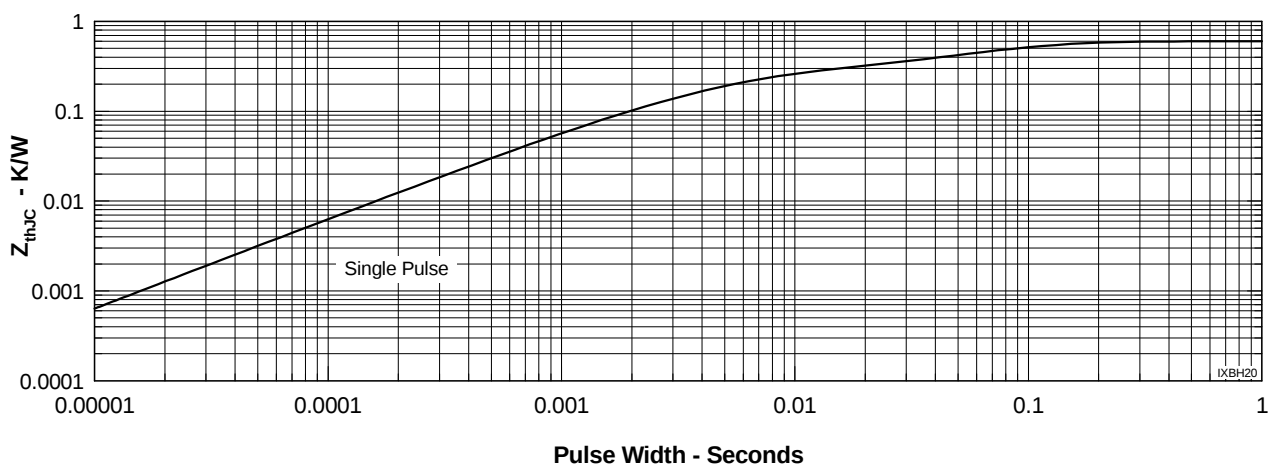


Fig. 9 Typ. Transient Thermal Impedance