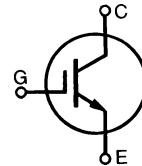


HiPerFAST™ IGBT Lightspeed™ Series

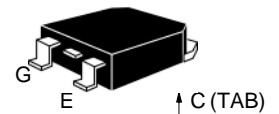
**IXGH 32N60C
IXGT 32N60C**

V_{CES} = 600 V
I_{C25} = 60 A
V_{CE(sat)typ} = 2.1 V
t_{fi typ} = 55 ns

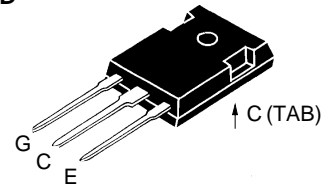


Symbol	Test Conditions	Maximum Ratings	
V _{CES}	T _J = 25°C to 150°C	600	V
V _{CGR}	T _J = 25°C to 150°C; R _{GE} = 1 MΩ	600	V
V _{GES}	Continuous	±20	V
V _{GEM}	Transient	±30	V
I _{C25}	T _C = 25°C	60	A
I _{C110}	T _C = 110°C	32	A
I _{CM}	T _C = 25°C, 1 ms	120	A
SSOA (RBSOA)	V _{GE} = 15 V, T _{VJ} = 125°C, R _G = 10 Ω Clamped inductive load, L = 100 μH	I _{CM} = 64 @ 0.8 V _{CES}	A
P _C	T _C = 25°C	200	W
T _J		-55 ... +150	°C
T _{JM}		150	°C
T _{stg}		-55 ... +150	°C
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	°C
M _d	Mounting torque (M3)	1.13/10 Nm/lb.in.	
Weight		TO-247 AD	6 g
		TO-268	4 g

**TO-268
(IXGT)**



**TO-247 AD
(IXGH)**



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

Features

- International standard packages JEDEC TO-247 and surface mountable TO-268
- High current handling capability
- Latest generation HDMOS™ process
- MOS Gate turn-on - drive simplicity

Applications

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

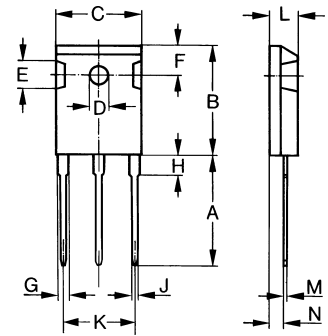
Advantages

- High power density
- Very fast switching speeds for high frequency applications

Symbol	Test Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	I _C = 250 μA, V _{GE} = 0 V	600		V
V_{GE(th)}	I _C = 250 μA, V _{CE} = V _{GE}	2.5		5 V
I_{CES}	V _{CE} = 0.8 • V _{CES} V _{GE} = 0 V			T _J = 25°C: 200 μA T _J = 150°C: 1 mA
I_{GES}	V _{CE} = 0 V, V _{GE} = ±20 V			±100 nA
V_{CE(sat)}	I _C = I _{C110} , V _{GE} = 15 V		2.1	2.5 V

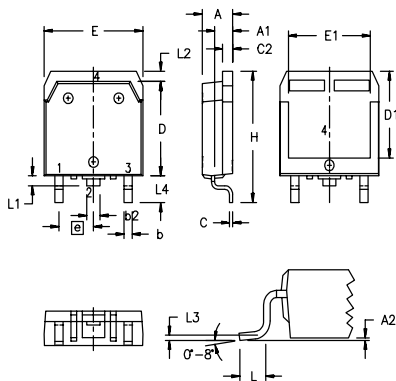
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$I_C = I_{C110}, V_{CE} = 10\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$		25	S
C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		2700	pF
C_{oes}			190	pF
C_{res}			50	pF
Q_g	$I_C = I_{C110}, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$		110	nC
Q_{ge}			22	nC
Q_{gc}			40	nC
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$		25	ns
t_{ri}	$I_C = I_{C110}, V_{GE} = 15\text{ V}, L = 100\ \mu\text{H}$, $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 4.7\ \Omega$		20	ns
$t_{d(off)}$			85	ns
t_{fi}	Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 \cdot V_{CES}$, higher T_J or increased R_G		55	ns
E_{off}			0.32	mJ
$t_{d(on)}$	Inductive load, $T_J = 150^\circ\text{C}$		25	ns
t_{ri}	$I_C = I_{C110}, V_{GE} = 15\text{ V}, L = 100\ \mu\text{H}$, $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 4.7\ \Omega$		25	ns
E_{on}			0.30	mJ
$t_{d(off)}$	Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 \cdot V_{CES}$, higher T_J or increased R_G		110	170 ns
t_{fi}			105	160 ns
E_{off}		0.85	1.25 mJ	
R_{thJC}				0.62 K/W
R_{thCK}	(IXGH32N60C)		0.25	K/W

TO-247 AD (IXGH) Outline



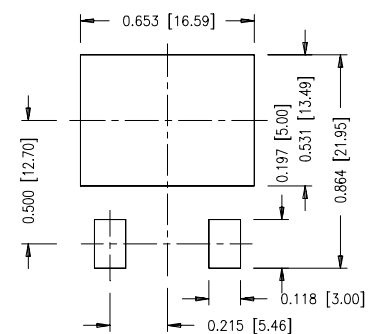
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209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

TO-268AA (D³ PAK)



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.9	5.1	.193	.201
A ₁	2.7	2.9	.106	.114
A ₂	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b ₂	1.9	2.1	.75	.83
C	.4	.65	.016	.026
D	13.80	14.00	.543	.551
E	15.85	16.05	.624	.632
E ₁	13.3	13.6	.524	.535
e	5.45 BSC		.215 BSC	
H	18.70	19.10	.736	.752
L	2.40	2.70	.094	.106
L ₁	1.20	1.40	.047	.055
L ₂	1.00	1.15	.039	.045
L ₃	0.25 BSC		.010 BSC	
L ₄	3.80	4.10	.150	.161

Min. Recommended Footprint



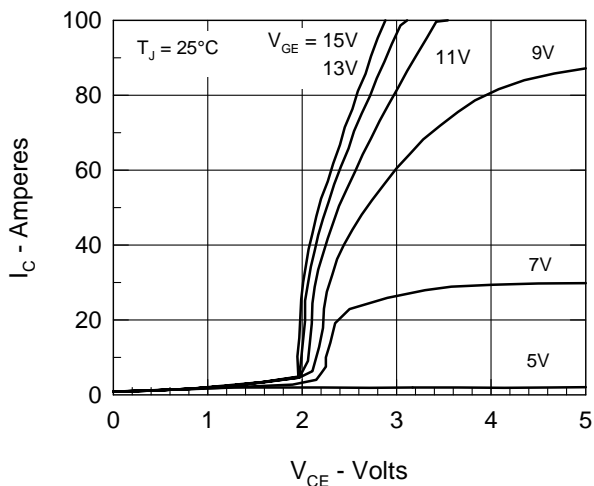


Fig. 1. Output Characteristics

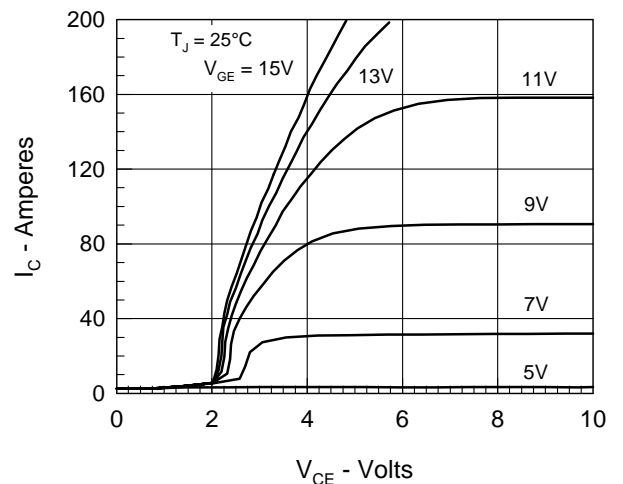


Fig. 2. Extended Output Characteristics

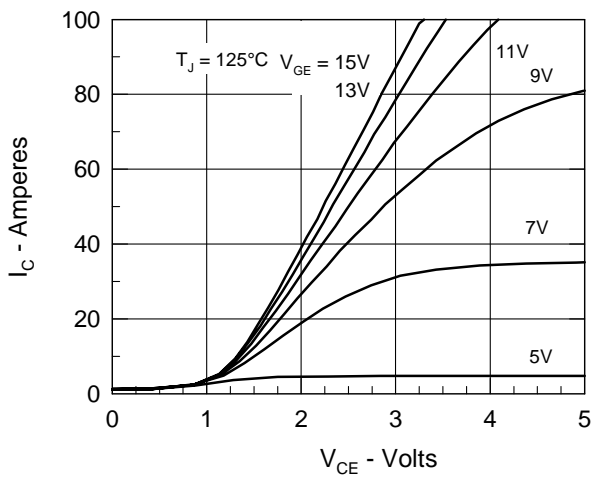


Fig. 3. High Temperature Output Characteristics

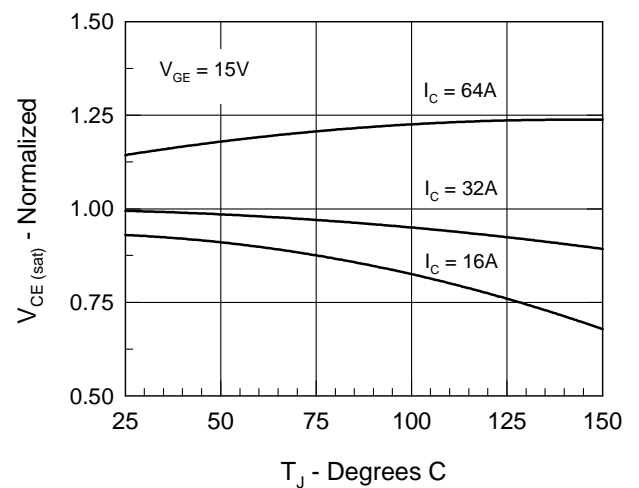
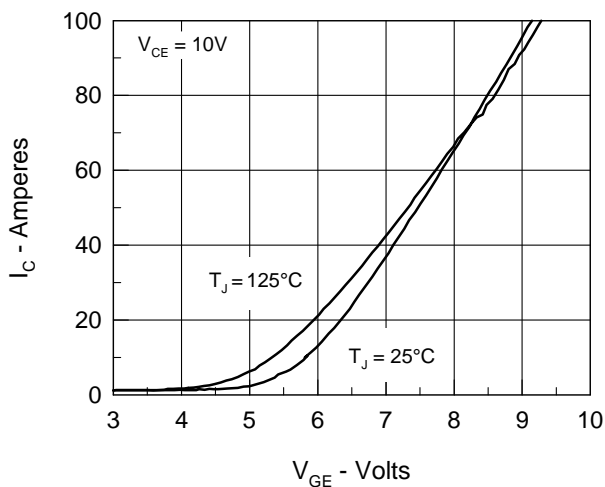

 Fig. 4. Temperature Dependence of $V_{CE(sat)}$


Fig. 5. Admittance Curves

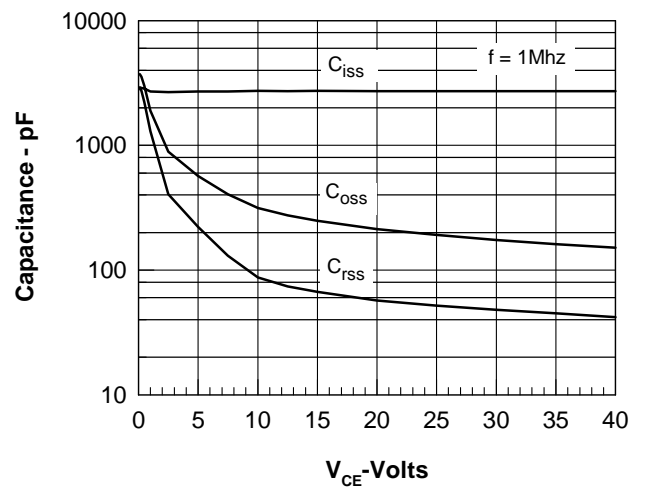


Fig. 6. Capacitance Curves

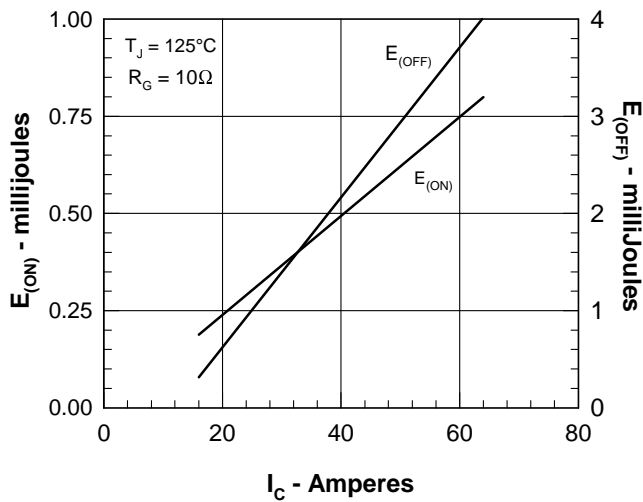


Fig. 7. Dependence of E_{ON} and E_{OFF} on I_C .

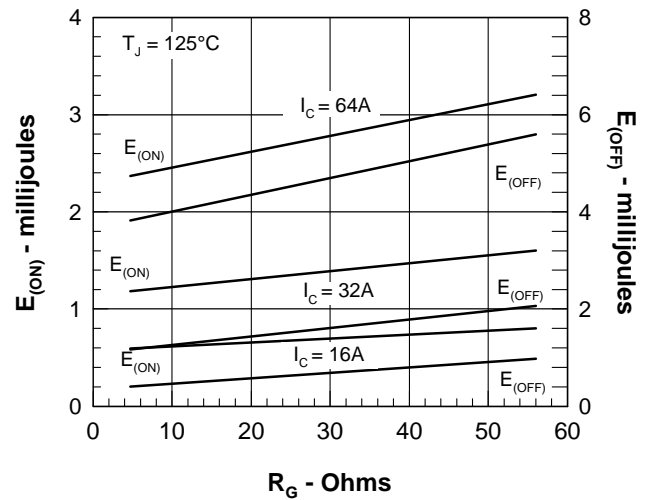


Fig. 8. Dependence of E_{ON} and E_{OFF} on R_G .

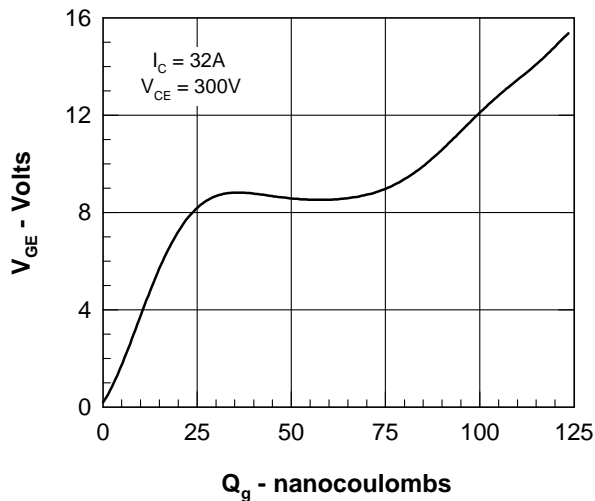


Fig. 9. Gate Charge

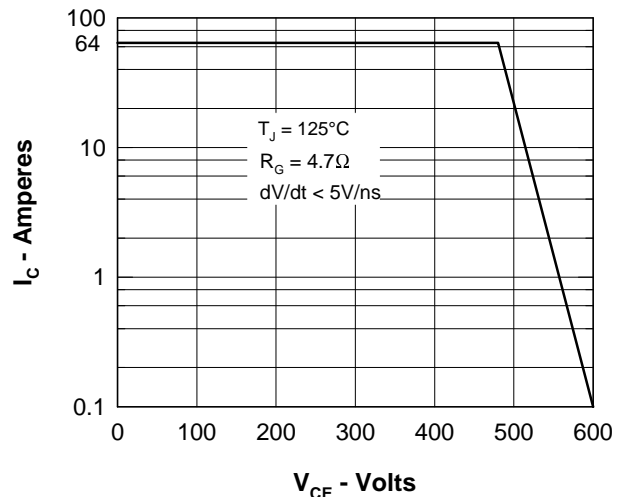


Fig. 10. Turn-off Safe Operating Area

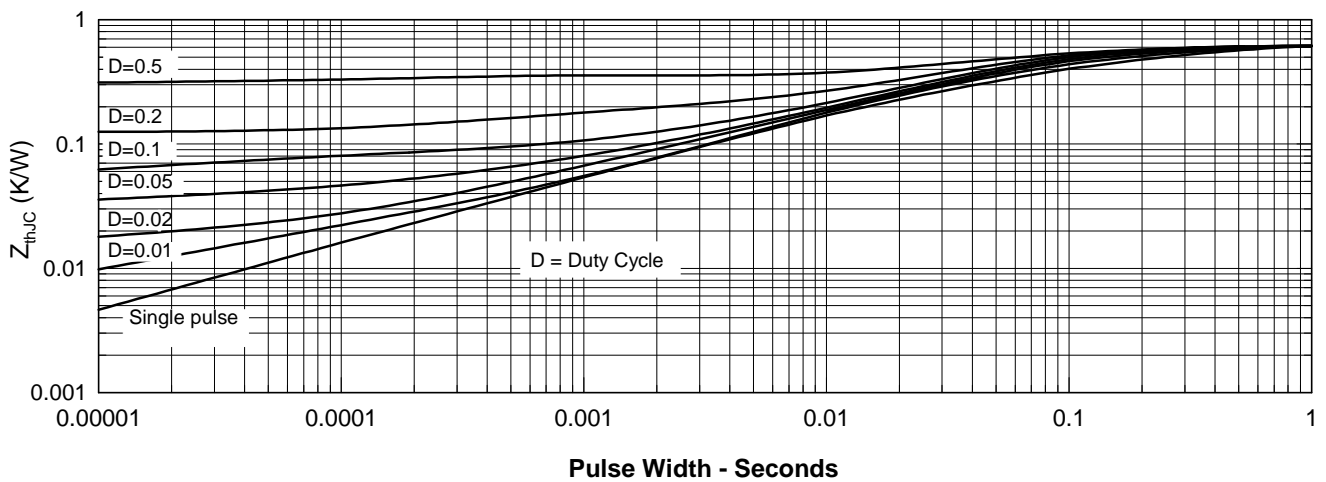


Fig. 11. Transient Thermal Resistance