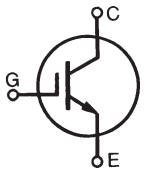
IXYS

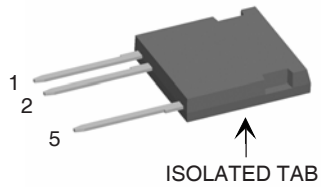
High Voltage IGBT — IXGF32N170

V_{CES} = 1700V
I_{C110} = 19A
$V_{CE(sat)}$ ≤ 3.5V
$t_{fi(typ)}$ = 250ns

(Electrically Isolated Tab)



ISOPLUS i4-Pak™



1 = Gate 5 = Collector
2 = Emitter

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1700	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	T_C = 25°C	44	A
I_{C110}	T_C = 110°C	19	A
I_{CM}	T_C = 25°C, 1ms	200	A
SSOA	V_{GE}= 15V, T_{VJ} = 125°C, R_G = 2.7Ω	I_{CM} = 70	A
(RBSOA)	Clamped Inductive Load	@ 0.8 • V_{CES}	
t_{sc}	T_C = 125°C, V_{CE} = 1200V, V_{GE} = 15V, R_G = 10Ω	10	μs
P_C	T_C = 25°C	200	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	1.6 mm (0.062 in.) from Case for 10s	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
F_C	Mounting Force	20..120 / 4.5..27	Nm/lb.in.
V_{ISOL}	50/60Hz, 1 minute	2500	V~
Weight		5	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{CES}	I_C = 1mA, V_{GE} = 0V	1700			V
$V_{GE(th)}$	I_C = 250μA, V_{CE} = V_{GE}	3.0		5.0	V
I_{CES}	V_{CE} = 0.8 • V_{CES}, V_{GE}= 0V, Note 2			50	μA
	T_J = 125°C			1	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ±20V			±100	nA
$V_{CE(sat)}$	I_C = 32A, V_{GE} = 15V, Note 1		2.7	3.5	V
	T_J = 125°C		3.3		V

Features

- Electrically Isolated Tab
- High Current Handling Capability
- Rugged NPT Structure
- Molding Epoxies Meet UL 94 V-0 Flammability Classification

Applications

- Capacitor Discharge & Pulser Circuits
- AC Motor Drives
- Uninterruptible Power Supplies (UPS)
- Switched-Mode and Resonant-Mode Power Supplies

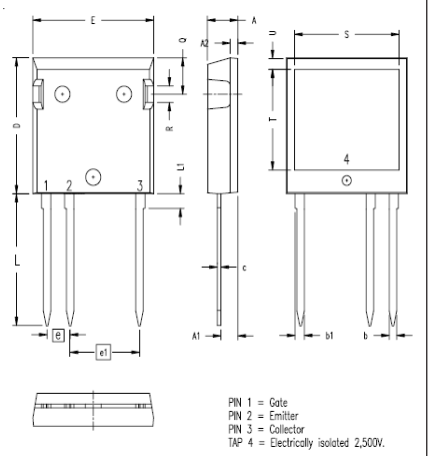
Advantages

- High Power Density
- Suitable for Surface Mounting

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Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	I_C = 32A, V_{CE} = 10V, Note 1	20	30		S
C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz		4290		pF
C_{oes}			167		pF
C_{res}			47		pF
Q_g	I_C = 32A, V_{GE} = 15V, V_{CE} = 0.5 • V_{CES}		146		nC
Q_{ge}			28		nC
Q_{gc}			52		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C** I_C = 32A, V_{GE} = 15V V_{CE} = 0.6 • V_{CES}, R_G = 2.7Ω		45		ns
t_{ri}			38		ns
$t_{d(off)}$			270	500	ns
t_{fi}			250	500	ns
E_{off}			10.6	20	mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C** I_C = 32A, V_{GE} = 15V V_{CE} = 0.6 • V_{CES}, R_G = 2.7Ω		48		ns
t_{ri}			42		ns
E_{off}			6.0		mJ
$t_{d(off)}$			360		ns
t_{fi}			560		ns
E_{off}			13.5		mJ
R_{thJC}				0.62	°C/W
R_{thCS}			0.15		°C/W
R_{thJA}			30		°C/W

ISOPLUS i4-Pak™ (HV) (IXGF) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.190	.205	4.83	5.21
A1	.102	.118	2.59	3.00
A2	.046	.085	1.17	2.16
b	.045	.055	1.14	1.40
b1	.058	.068	1.47	1.73
C	.020	.029	0.51	0.74
D	.819	.840	20.80	21.34
E	.770	.799	19.56	20.29
e	.150 BSC		3.81 BSC	
e1	.450 BSC		11.43 BSC	
L	.780	.840	19.81	21.34
L1	.083	.102	2.11	2.59
Q	.210	.244	5.33	6.20
R	.100	.180	2.54	4.57
S	.660	.690	16.76	17.53
T	.590	.620	14.99	15.75
U	.065	.080	1.65	2.03

Notes: 1. Pulse test, t < 300μs; duty cycle, d < 2%.
2. Device must be heatsunk for high temperature leakage current measurements to avoid thermal runaway.

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 4,850,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

Fig. 1. Output Characteristics @ 25ºC

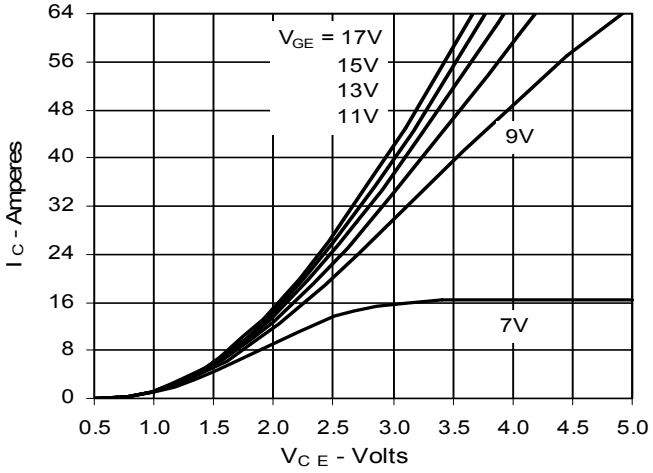


Fig. 2. Extended Output Characteristics @ 25ºC

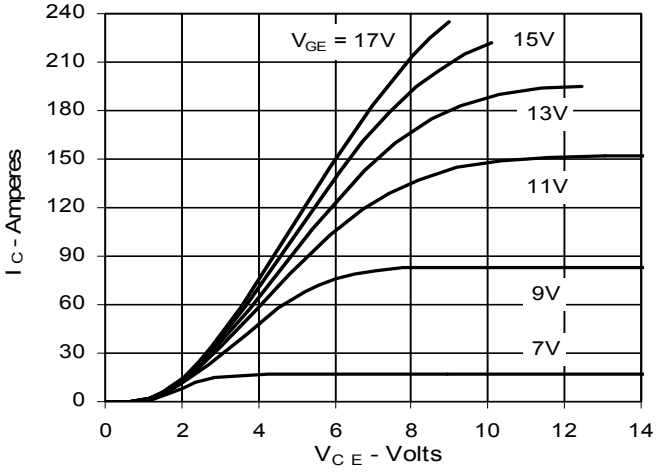


Fig. 3. Output Characteristics @ 125ºC

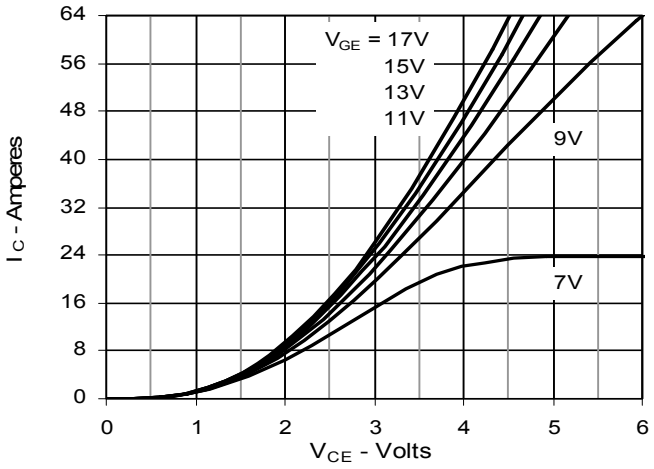


Fig. 4. Dependence of $V_{CE(sat)}$ on Temperature

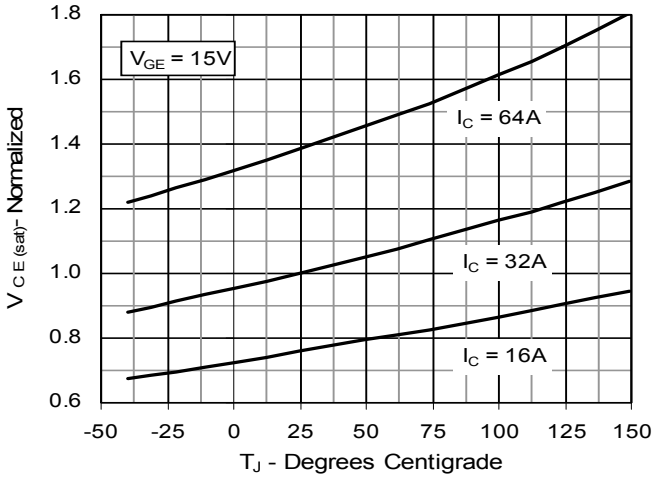


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emiiter voltage

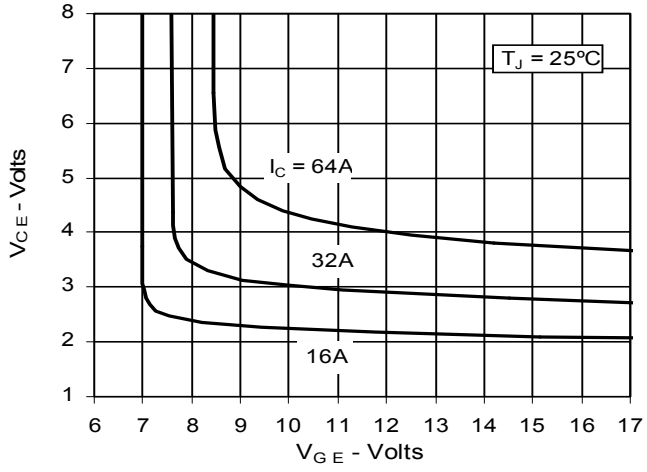
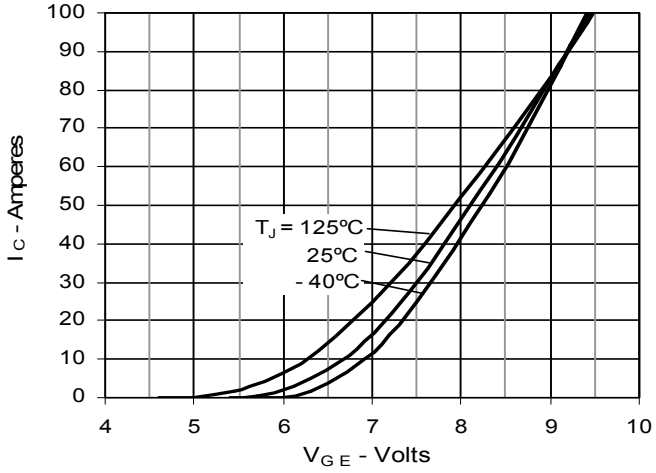


Fig. 6. Input Admittance



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Fig. 7. Transconductance

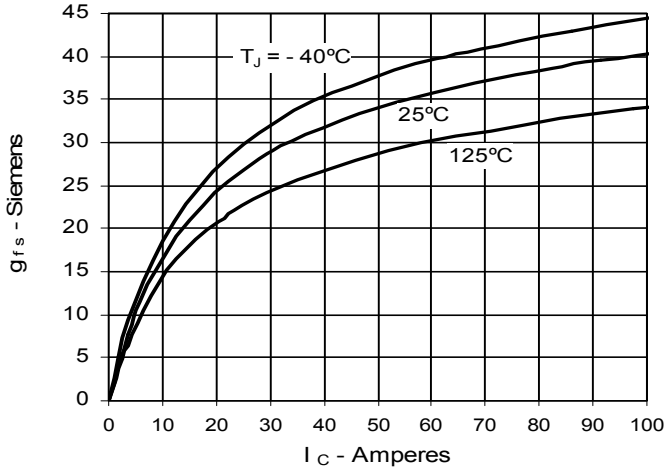


Fig. 8. Gate Charge

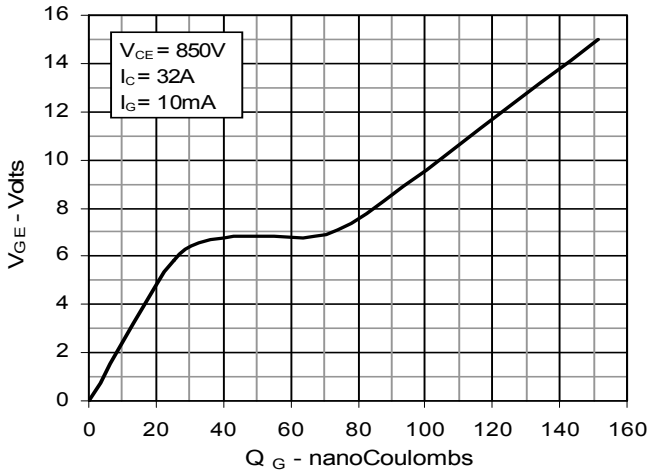


Fig. 9. Capacitance

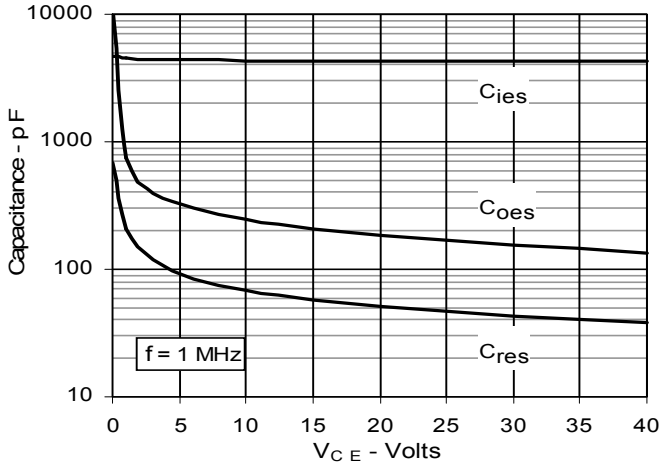


Fig. 10. Dependence of E_{off} on R_G

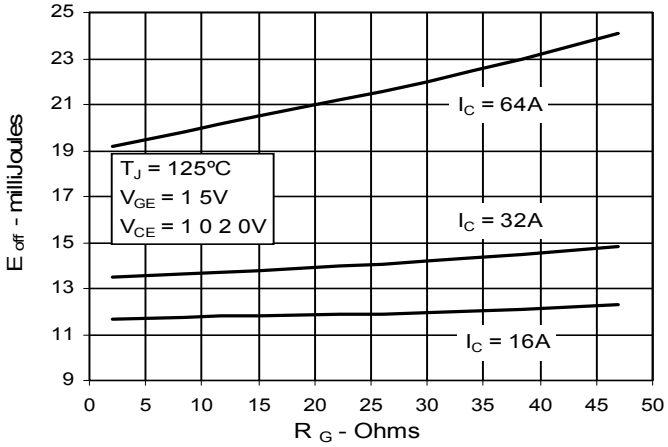


Fig. 11. Dependence of E_{off} on I_C

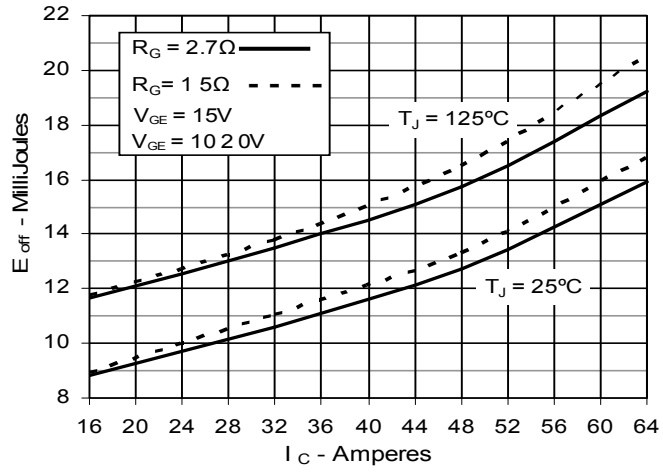
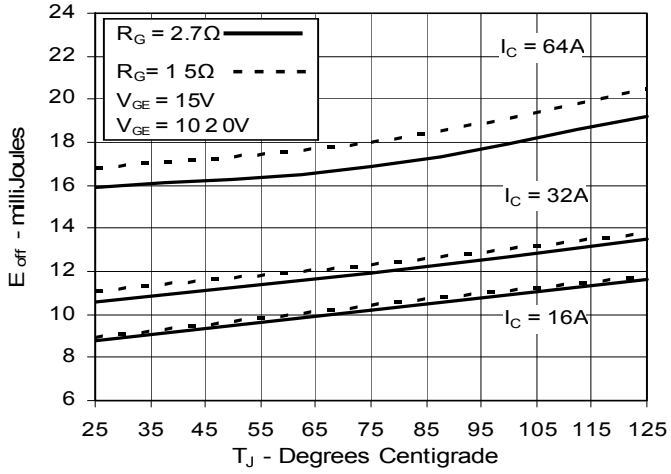
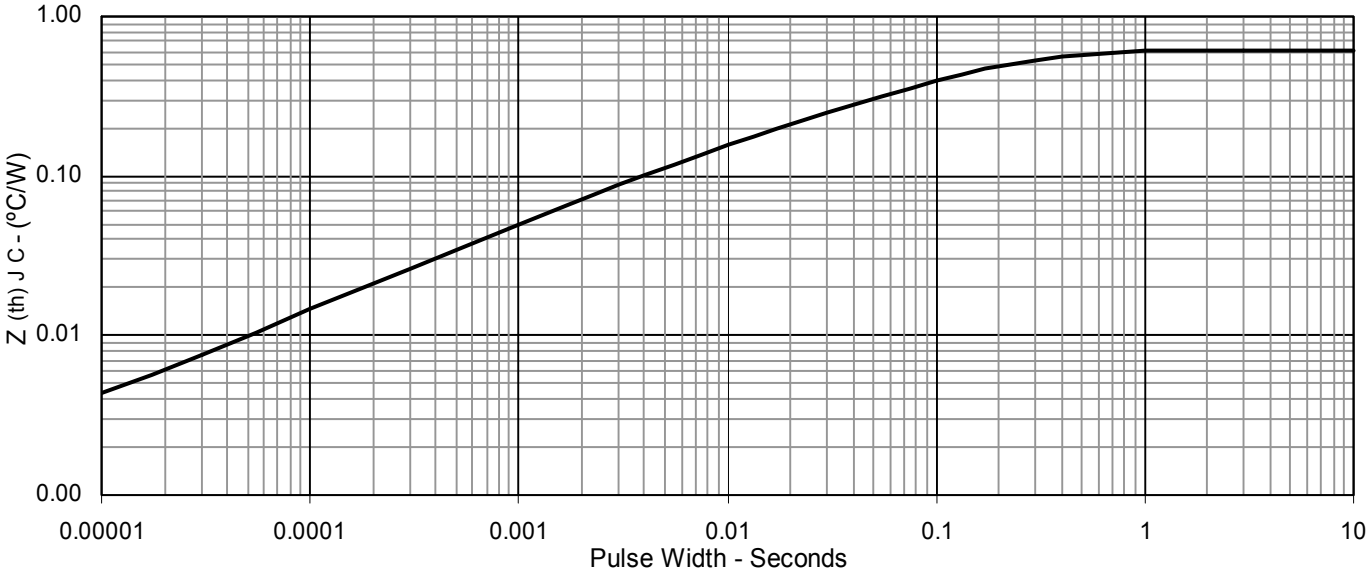


Fig. 12. Dependence of E_{off} on Temperature



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Fig. 13. Maximum Transient Thermal Impedance



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