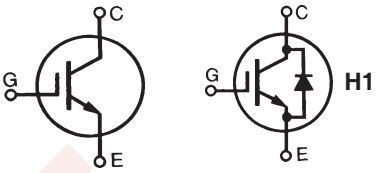
OBSOLETE

IXYS

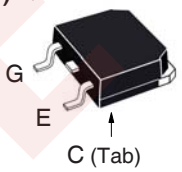
High Voltage IGBT w/ Sonic Diode

IXGT16N170A
IXGH16N170A
IXGT16N170AH1
IXGH16N170AH1

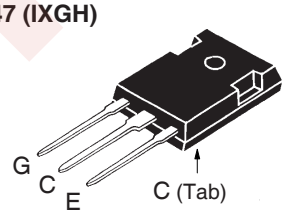
V_{CES} = 1700V
I_{C90} = 11A
$V_{CE(sat)}$ ≤ 5.0V
$t_{fi(typ)}$ = 35ns



TO-268 (IXGT)



TO-247 (IXGH)



G = Gate C = Collector
E = Emiiter Tab = Collector

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1700	V
V_{CGR}	T_J = 25°C to 150°C, R_{GE} = 1MΩ	1700	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	16	A
I_{C90}	T_C = 90°C	11	A
I_{F90}	T_C = 90°C	17	A
I_{CM}	T_C = 25°C, 1ms	40	A
SSOA (RBSOA)	V_{GE} = 15V, T_{VJ} = 125°C, R_G = 10Ω Clamped Inductive Load	I_{CM} = 40 0.8 • V_{CES}	A
t_{sc} (SCSOA)	V_{GE} = 15V, V_{CE} = 1200V, T_J = 125°C R_G = 22Ω, Non Repetitive	10	μs
P_C	T_C = 25°C	190	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
M_d	Mounting Torque (TO-247)	1.13/10	Nm/lb.in
Weight	TO-268	4	g
	TO-247	6	g

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)		Characteristic Values Min.	Typ.	Max.	
BV_{CES}	I_C = 250μA, 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	16N170A			50	μA
		16N170AH1			100	μA
	T_J = 125°C	16N170A			750	μA
		16N170AH1			1.5	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ±20V				±100	nA
$V_{CE(sat)}$	I_C = 11A, V_{GE} = 15V, Note 1			4.0	5.0	V
	T_J = 125°C			4.5		V

Features

- High Blocking Voltage
- International Standard Packages
- Low Conduction Losses
- Anti-Parallel Sonic Diode
- High Blocking Voltage
- High Currect Handling Capability

Advantages

- Low Gate Drive Requirement
- High Power Density

Applications

- Switch-Mode and Resonant-Mode Power Supplies
- Uninterruptible Power Supplies (UPS)
- AC Choppers
- Capacitor Discharge Circuits
- AC Motor Drives
- DC Servo & Robot Drives

© 2014 IXYS CORPORATION, All Rights Reserved

Downloaded from Arrow.com.

OBSOLETE

IXYS

IXGH/T16N170A
IXGH/T16N170AH1

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)		Characteristic Values Min.	Typ.	Max.	
g_{fs}	I_C = 16A, V_{CE} = 10V, Note 1		6.0	12.5		S
C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz			1500		pF
C_{oes}		16N170A		99		pF
		16N170AH1		110		pF
C_{res}				33		pF
$Q_{g(on)}$	I_C = 11A, V_{GE} = 15V, V_{CE} = 0.5 • V_{CES}			70		nC
Q_{ge}				9		nC
Q_{gc}				32		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**			12		ns
t_{ri}	I_C = 16A, V_{GE} = 15V			22		ns
E_{on}	V_{CE} = 0.5 • V_{CES}, R_G = 10Ω			2.35		mJ
$t_{d(off)}$	Note 2			200	300	ns
t_{fi}				35	150	ns
E_{off}				0.38	1.50	mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**			13		ns
t_{ri}	I_C = 16A, V_{GE} = 15V			22		ns
E_{on}	V_{CE} = 0.5 • V_{CES}, R_G = 10Ω			2.80		mJ
$t_{d(off)}$	Note 2			210		ns
t_{fi}				88		ns
E_{off}				0.67		mJ
R_{thJC}					0.65	°C/W
R_{thCS}				0.21		°C/W

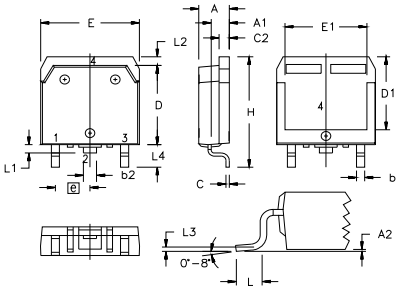
Reverse Sonic Diode (FRD)

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
V_F	I_F = 20A, V_{GE} = 0V, Note 1			3.4	V
		T_J = 125°C	2.8		
t_{rr}	I_F = 10A, V_{GE} = 0V,		300		ns
		T_J = 125°C	550		ns
I_{RM}	$-di_F/dt$ = 250A/µs, V_R = 900V		13		A
		T_J = 125°C	15		A
R_{thJC}				1.5	°C/W

Notes:

1. Pulse test, t ≤ 300µs, duty cycle, d ≤ 2%.
2. Switching times & energy losses may increase for higher V_{CE}(clamp), T_J or R_G.

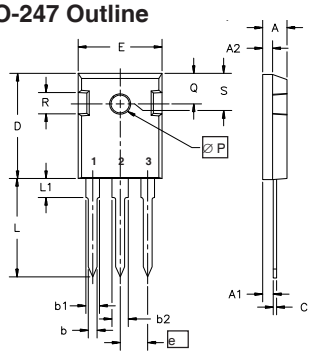
TO-268 Outline



Terminals: 1 - Gate 2,4 - Collector
3 - Emitter

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e	.215 BSC		5.45 BSC	
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010 BSC		0.25 BSC	
L4	.150	.161	3.80	4.10

TO-247 Outline



Terminals: 1 - Gate 2 - Collector
3 - Emitter

Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	4.7	5.3	.185	.209
A_1	2.2	2.54	.087	.102
A_2	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b_1	1.65	2.13	.065	.084
b_2	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
ØP	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15 BSC		242 BSC	

IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

IXYS MOSFETs and IGBTs are covered by one or moreof the following U.S. patents: 4,835,592 4,860,072 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

Downloaded from Arrow.com.

Fig. 1. Output Characteristics @ T_J = 25ºC

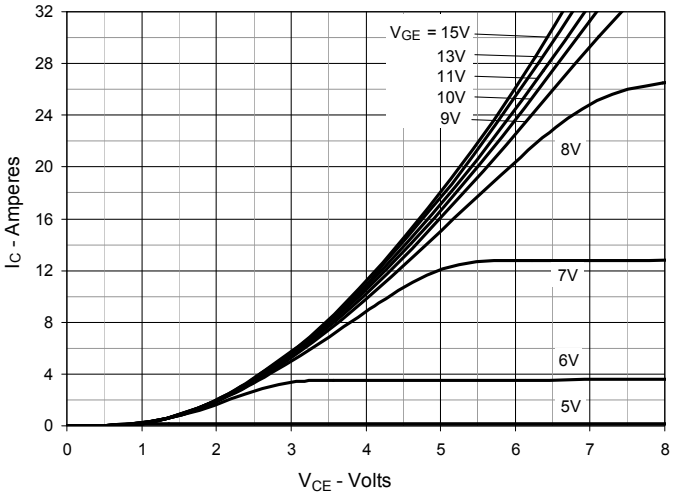


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

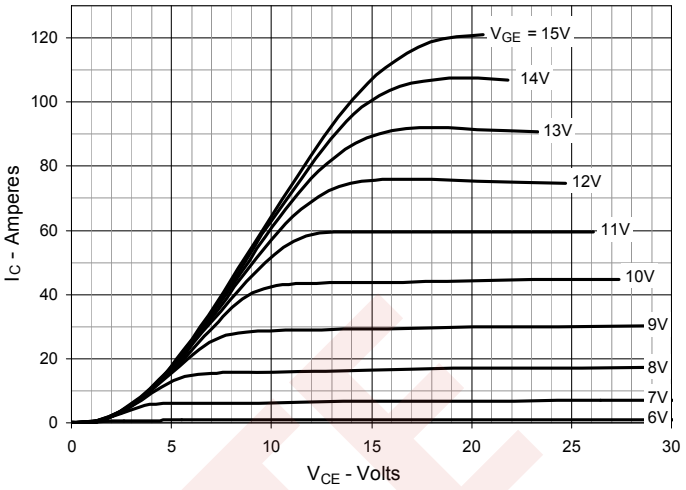


Fig. 3. Output Characteristics @ T_J = 125ºC

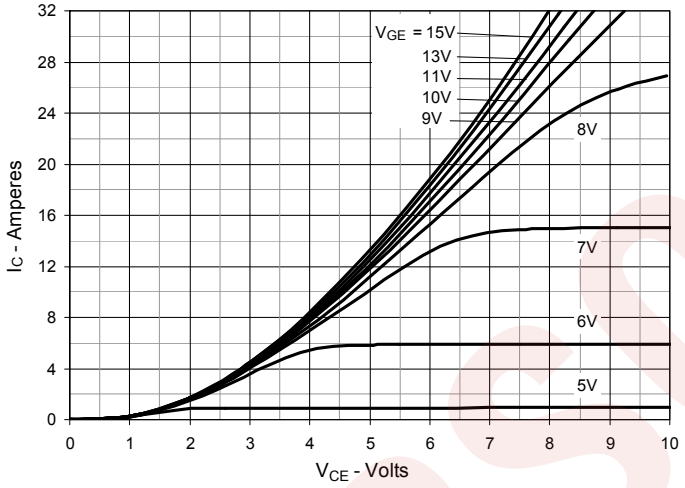


Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature

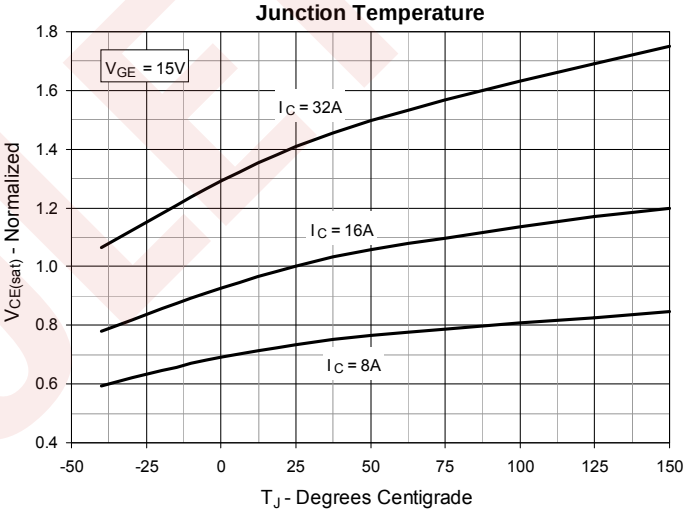


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

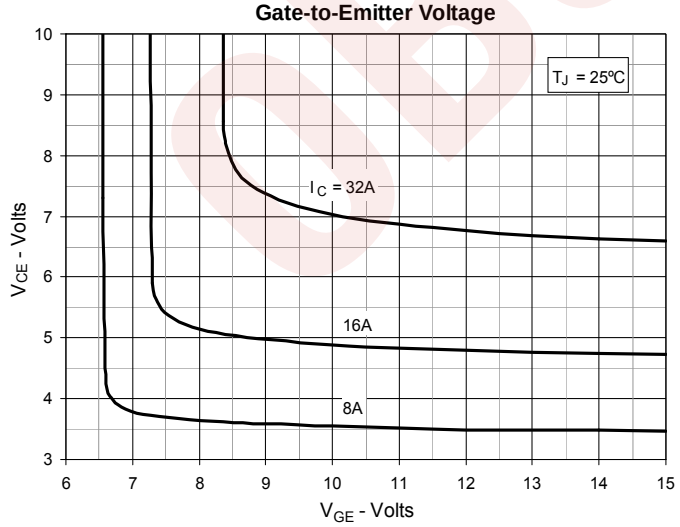
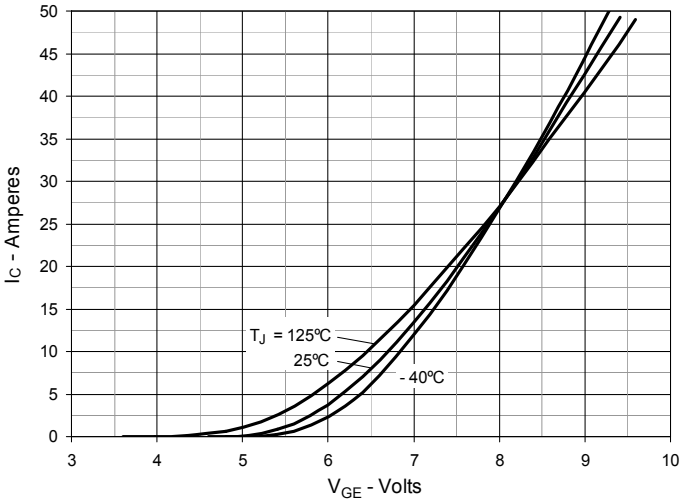


Fig. 6. Input Admittance



© 2014 IXYS CORPORATION, All Rights Reserved

Downloaded from Arrow.com.

OBSOLETE

Fig. 7. Transconductance

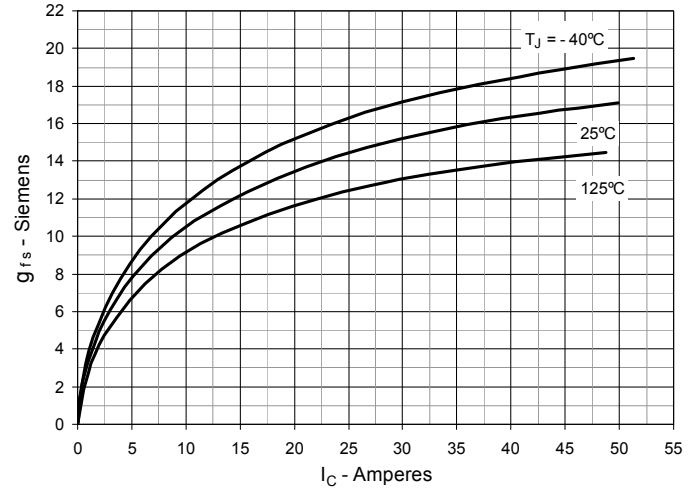


Fig. 8. Gate Charge

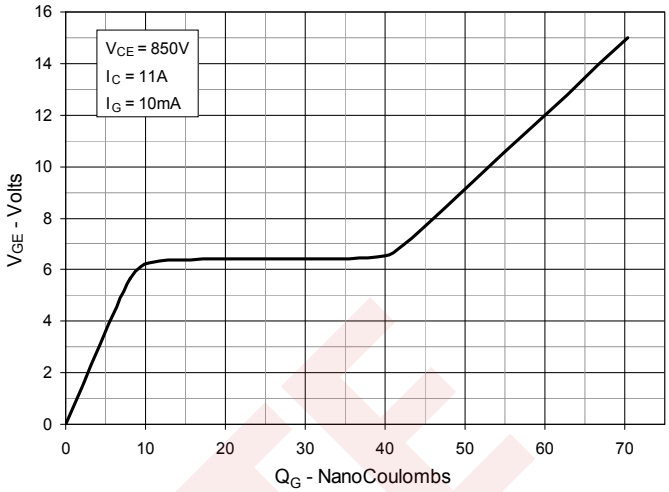


Fig. 9. Capacitance

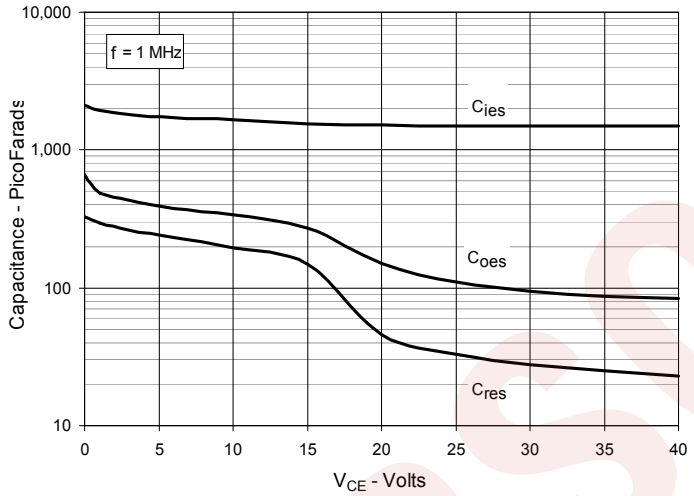


Fig. 10. Reverse-Bias Safe Operating Area

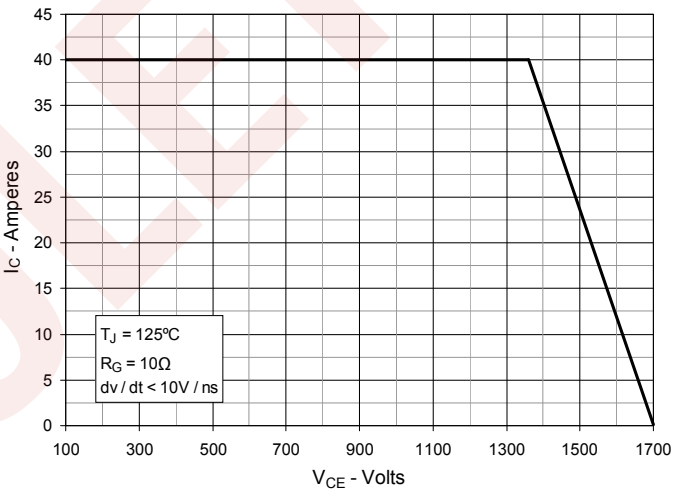
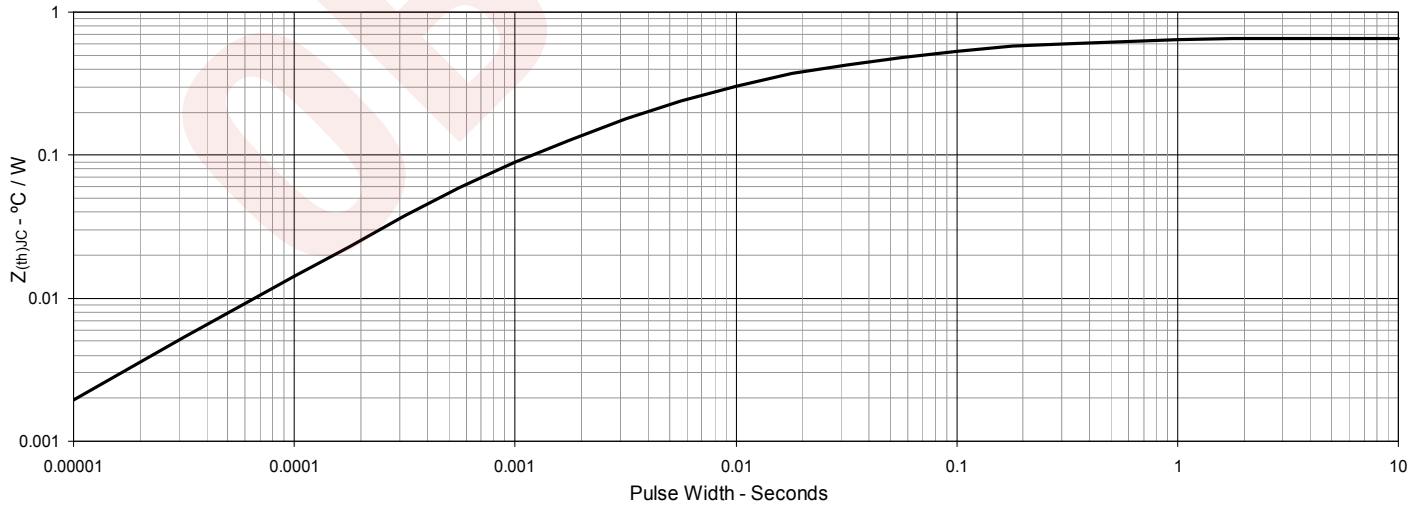


Fig. 11. Maximum Transient Thermal Impedance (IGBT)



IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

Downloaded from Arrow.com.

Fig. 12. Inductive Switching Energy Loss vs. Gate Resistance

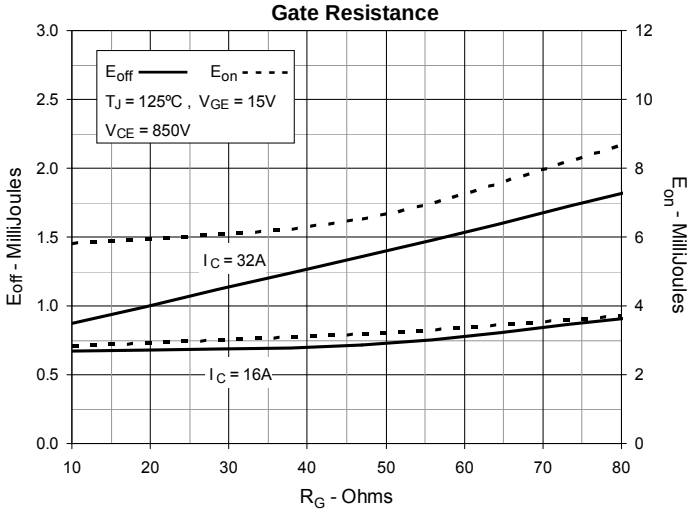


Fig. 13. Inductive Switching Energy Loss vs. Collector Current

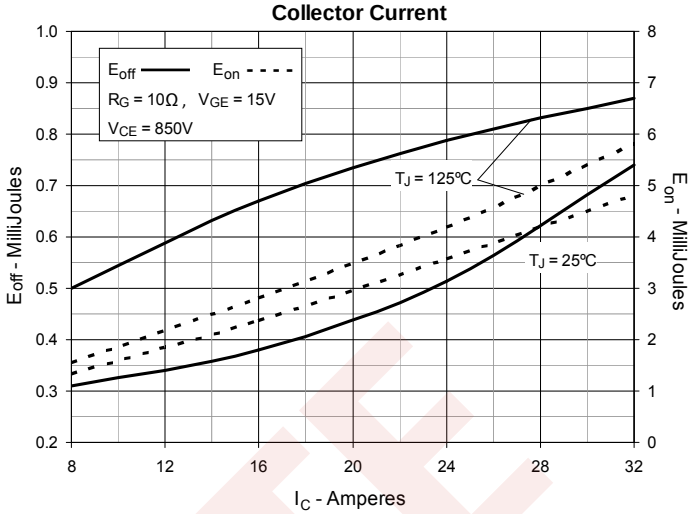


Fig. 14. Inductive Switching Energy Loss vs. Junction Temperature

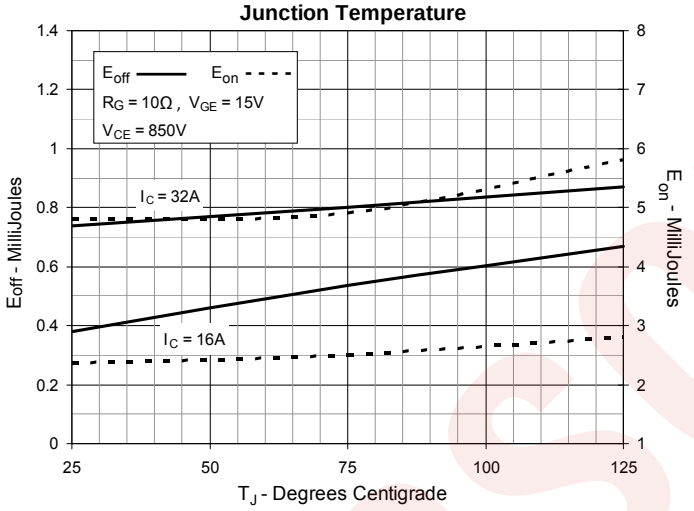


Fig. 15. Inductive Turn-off Switching Times vs. Gate Resistance

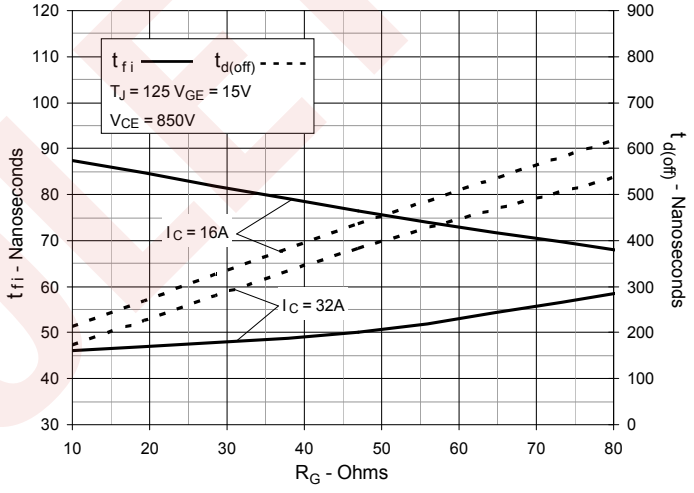


Fig. 16. Inductive Turn-off Switching Times vs. Collector Current

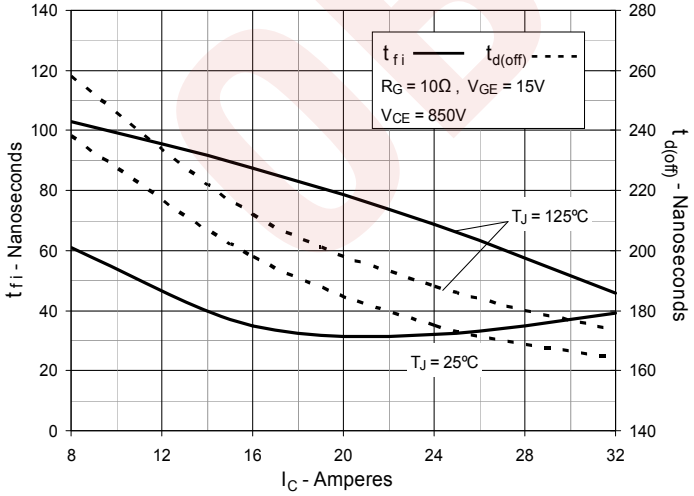
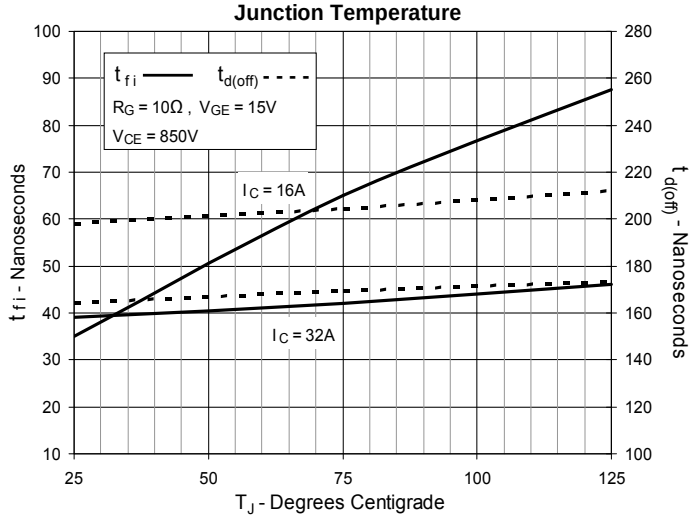


Fig. 17. Inductive Turn-off Switching Times vs. Junction Temperature



© 2014 IXYS CORPORATION, All Rights Reserved

Downloaded from Arrow.com.

Fig. 18. Inductive Turn-on Switching Times vs. Gate Resistance

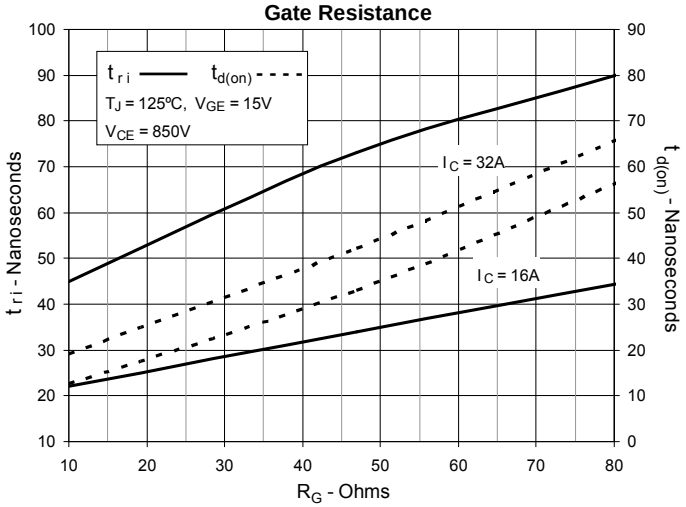


Fig. 19. Inductive Turn-on Switching Times vs. Collector Current

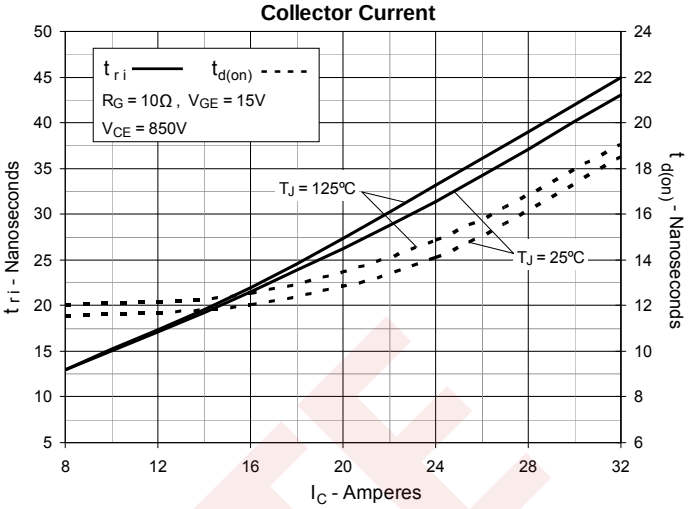
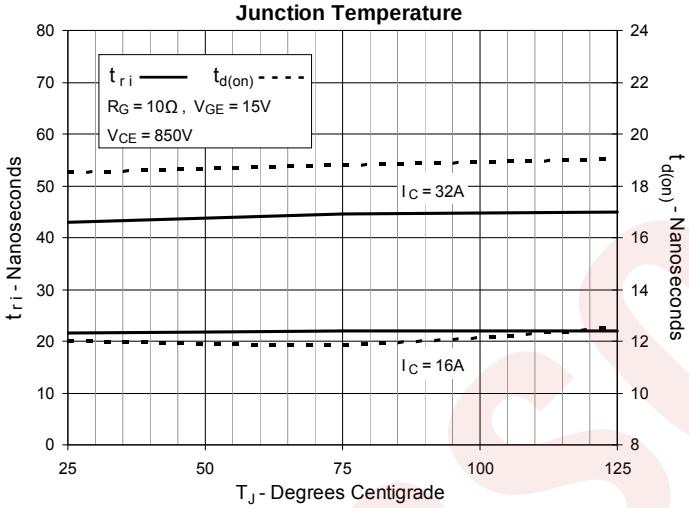


Fig. 20. Inductive Turn-on Switching Times vs. Junction Temperature



OBSOLETE

Downloaded from Arrow.com.

OBSOLETE

Fig. 21. Forward Current I_F vs V_F

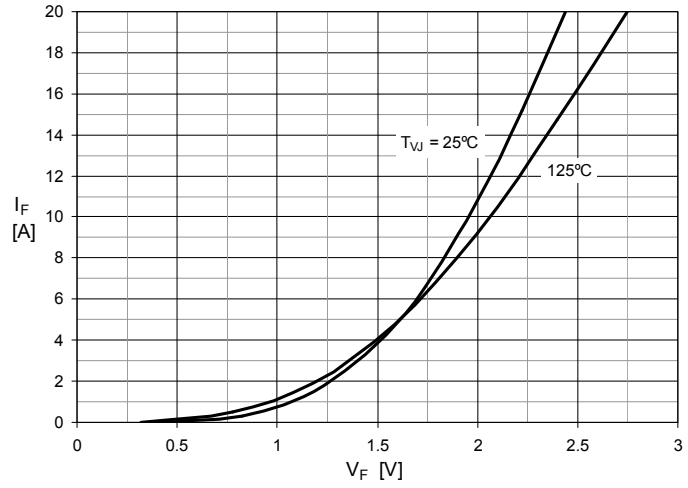


Fig. 22. Reverse Recovery Charge Q_{rr} vs. $-di_F/dt$

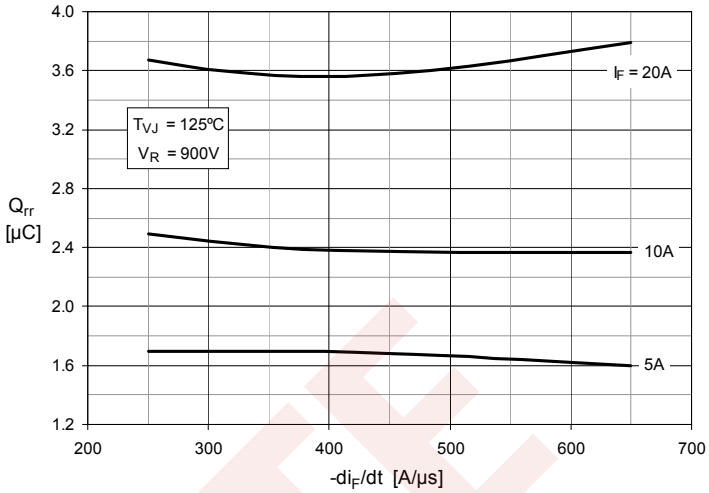


Fig. 23. Peak Reverse Current I_{RM} vs. $-di_F/dt$

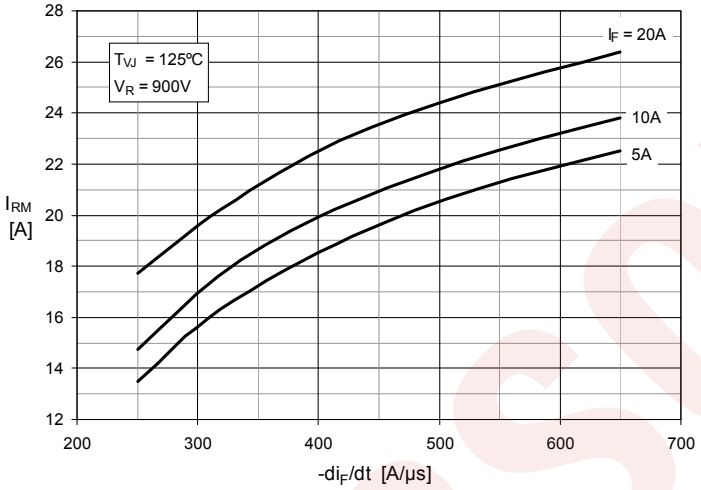


Fig. 24. Recovery Time t_{rr} vs. $-di_F/dt$

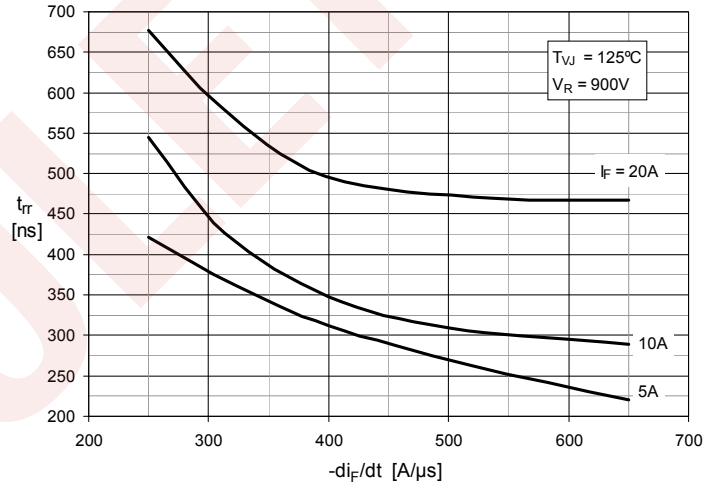


Fig. 25. Recovery Energy E_{rec} vs $-di_F/dt$

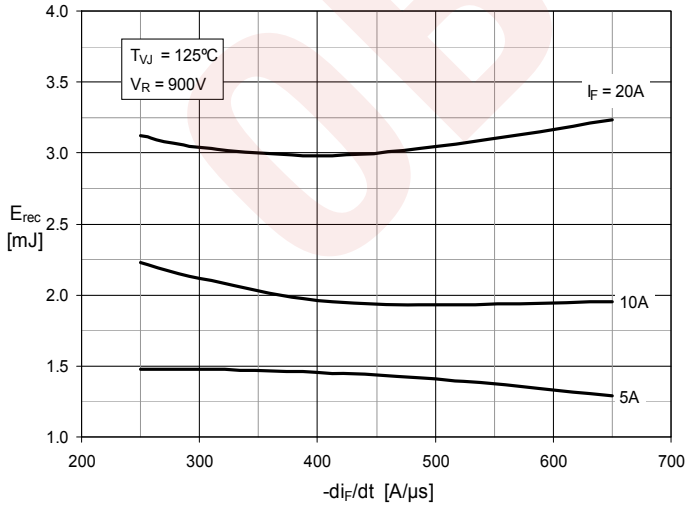
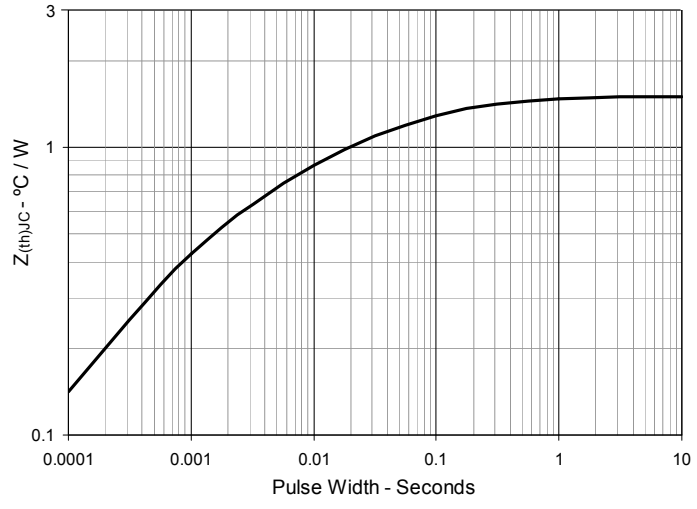


Fig. 26. Maximum Transient Thermal Impedance (Diode)



© 2014 IXYS CORPORATION, All Rights Reserved

Downloaded from Arrow.com.

OBSOLETE

OBSOLETE

IXYS
A Littelfuse Technology

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

Downloaded from Arrow.com.