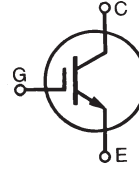
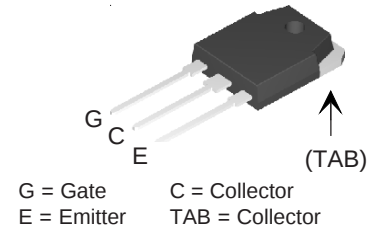


Polar™ High Speed IGBT for PDP Applications

IXGQ170N30PB

$$\begin{aligned} V_{CES} &= 300 \text{ V} \\ I_{CP} &= 360 \text{ A} \\ V_{CE(sat)} &\leq 1.70 \text{ V} \end{aligned}$$


TO-3P


Features

- International standard package
- Low $V_{CE(sat)}$
 - for minimum on-state conduction losses
- MOS Gate turn-on
 - drive simplicity

Applications

- PDP Screen Drivers

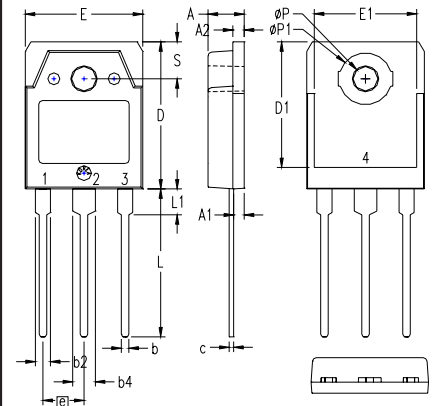
Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	300	V
V_{GEM}		± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$, IGBT chip capability	170	A
I_{CP}	$T_J \leq 150^\circ\text{C}$, $t_p < 10 \mu\text{s}$	360	A
$I_{C(RMS)}$	Lead current limit	75	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}$, $T_{VJ} = 150^\circ\text{C}$, $R_G = 20 \Omega$ Clamped inductive load, $V_{CE} < 300 \text{ V}$	$I_{CM} = 170$	A
P_C	$T_C = 25^\circ\text{C}$	330	W
T_J		$-55 \dots +150$	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		$-55 \dots +150$	$^\circ\text{C}$
T_L	Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
T_{SOLD}	Maximum plastic body temperature for 10 s.	260	$^\circ\text{C}$
M_d	Mounting torque	1.13/10	Nm/lb.in.
Weight		5.5	g

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$V_{GE(th)}$	$I_C = 1 \text{ mA}$, $V_{CE} = V_{GE}$	3.0		5.0 V
I_{CES}	$V_{CE} = 300 \text{ V}$			1 μA
	$V_{GE} = 0 \text{ V}$, $T_J = 125^\circ\text{C}$			200 μA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$V_{GE} = 15 \text{ V}$, $I_C = 85 \text{ A}$	1.32		1.70 V
	Note 1, $T_J = 125^\circ\text{C}$	1.36		V
	$I_C = 170 \text{ A}$	1.73		V
	$T_J = 125^\circ\text{C}$	1.89		V

Symbol	Test Conditions	Characteristic	Values
($T_J = 25^\circ\text{C}$ unless otherwise specified)		Min.	Typ. Max.
g_{fs}	$I_C = 85\text{ A}, V_{CE} = 10\text{ V}$	50	80 S
C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$	5140	pF
C_{oes}		315	pF
C_{res}		83	pF
Q_g	$I_C = 85\text{ A}, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$	143	nC
Q_{ge}		26	nC
Q_{gc}		60	nC
$t_{d(on)}$	Resistive load, $T_J = 25^\circ\text{C}$ $I_C = 85\text{ A}, V_{GE} = 15\text{ V}$ $V_{CE} = 240\text{ V}, R_G = 2.4\ \Omega$	24	ns
t_{ri}		71	ns
$t_{d(off)}$		100	ns
t_{fi}		82	ns
$t_{d(on)}$	Resistive load, $T_J = 125^\circ\text{C}$ $I_C = 85\text{ A}, V_{GE} = 15\text{ V}$ $V_{CE} = 240\text{ V}, R_G = 2.4\ \Omega$	22	ns
t_{ri}		81	ns
$t_{d(off)}$		102	ns
t_{fi}		157	ns
R_{thJC}			0.375 K/W
R_{thCS}		0.21	K/W

Note 1: Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$

TO-3P (IXTQ) Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.193	4.70	4.90
A1	.051	.059	1.30	1.50
A2	.057	.065	1.45	1.65
b	.035	.045	0.90	1.15
b2	.075	.087	1.90	2.20
b4	.114	.126	2.90	3.20
c	.022	.031	0.55	0.80
D	.780	.799	19.80	20.30
D1	.665	.677	16.90	17.20
E	.610	.622	15.50	15.80
E1	.531	.539	13.50	13.70
e	.215 BSC		5.45 BSC	
L	.779	.795	19.80	20.20
L1	.134	.142	3.40	3.60
ØP	.126	.134	3.20	3.40
ØP1	.272	.280	6.90	7.10
S	.193	.201	4.90	5.10

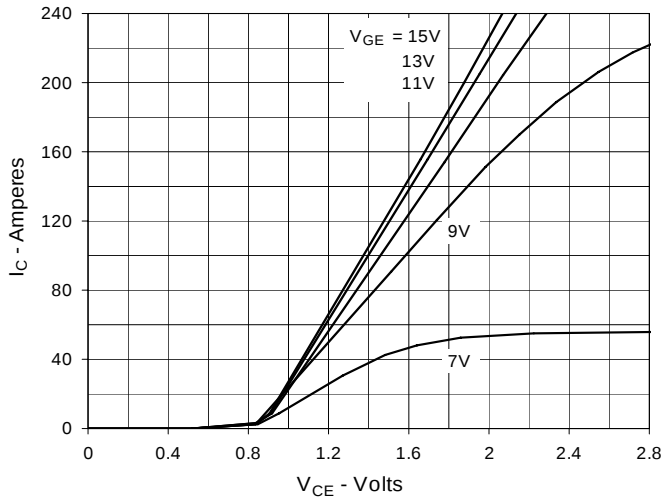
PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

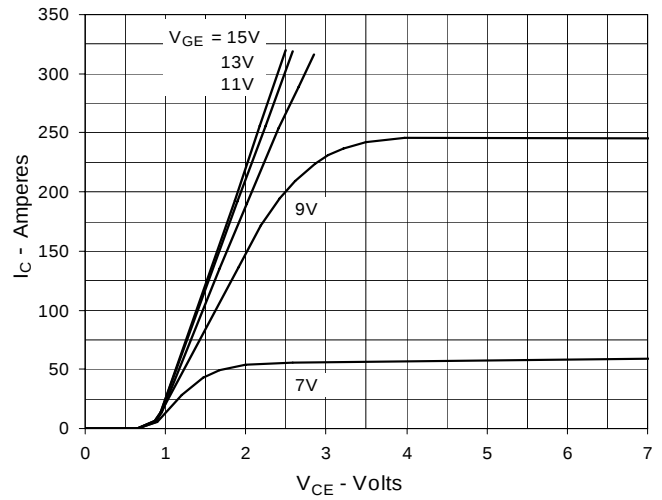
IXYS reserves the right to change limits, test conditions and dimensions.

IXYS MOSFETs and IGBTs are covered by 4,835,592 4,931,844 5,049,961 5,237,481 6,162,665 6,404,065 B1 6,683,344 6,727,585
one or more of the following U.S. patents: 4,850,072 5,017,508 5,063,307 5,381,025 6,259,123 B1 6,534,343 6,710,405 B2 6,759,692
4,881,106 5,034,796 5,187,117 5,486,715 6,306,728 B1 6,583,505 6,710,463 6,771,478 B2

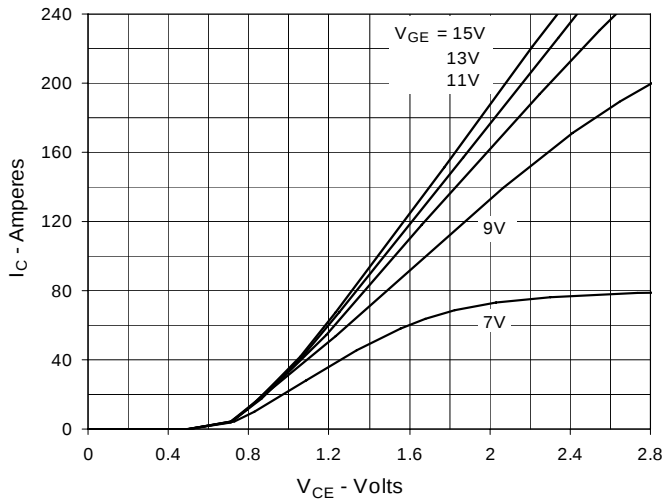
**Fig. 1. Output Characteristics
@ 25°C**



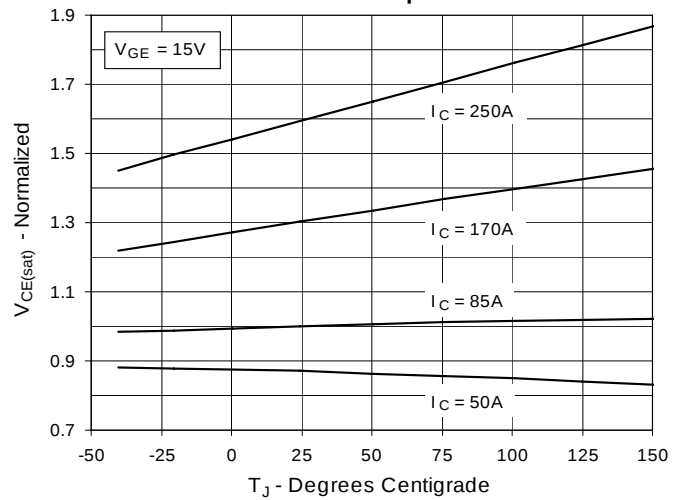
**Fig. 2. Extended Output Characteristics
@ 25°C**



**Fig. 3. Output Characteristics
@ 125°C**



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



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

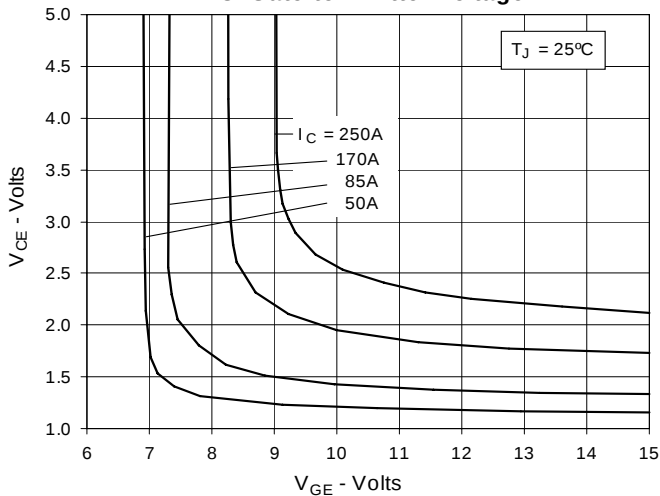


Fig. 6. Input Admittance

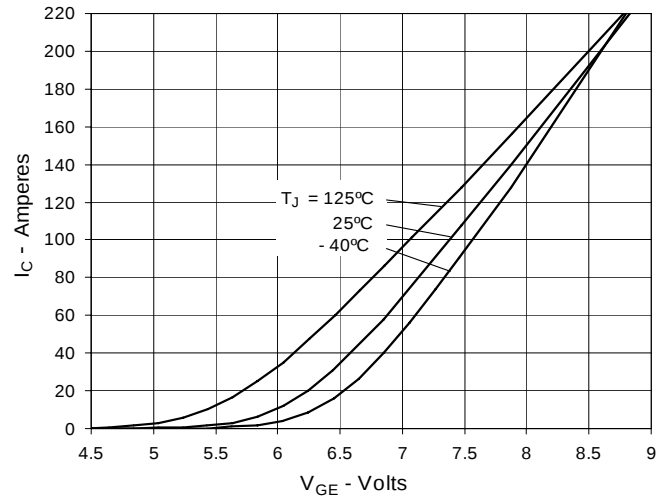


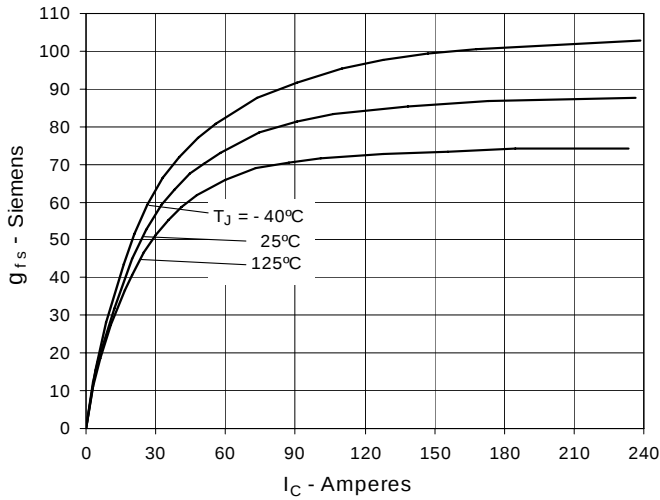
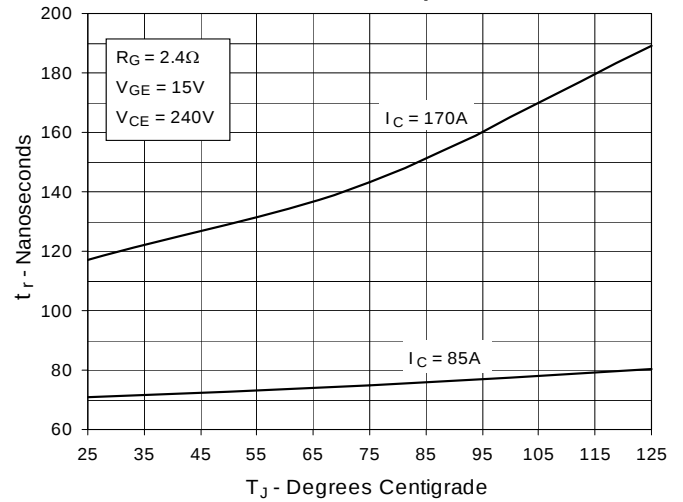
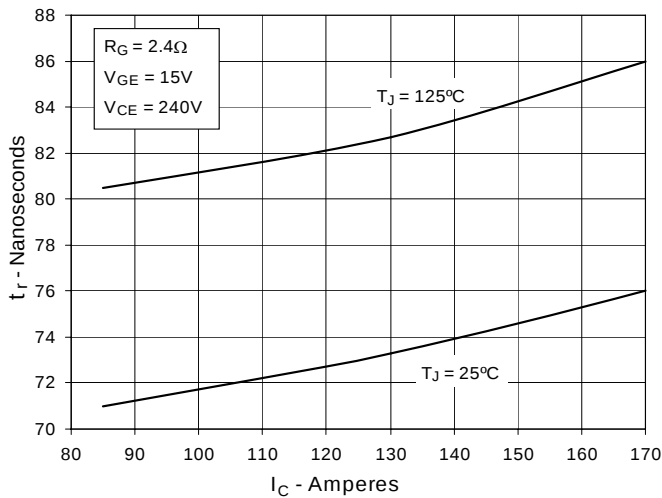
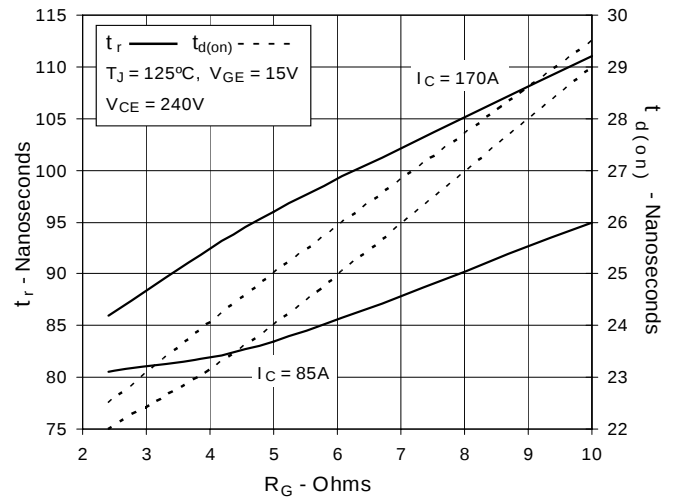
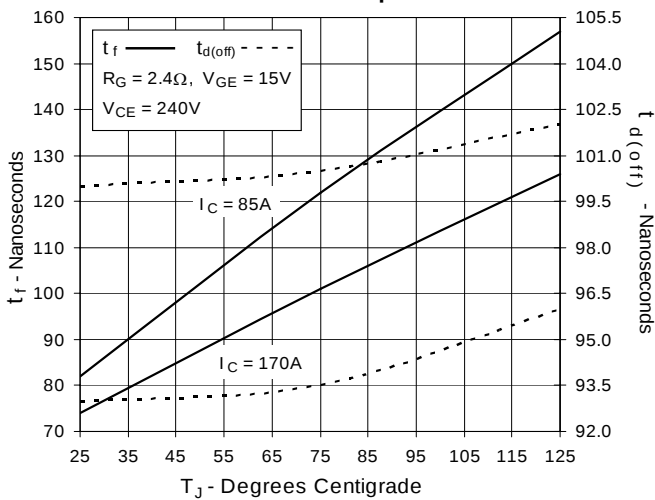
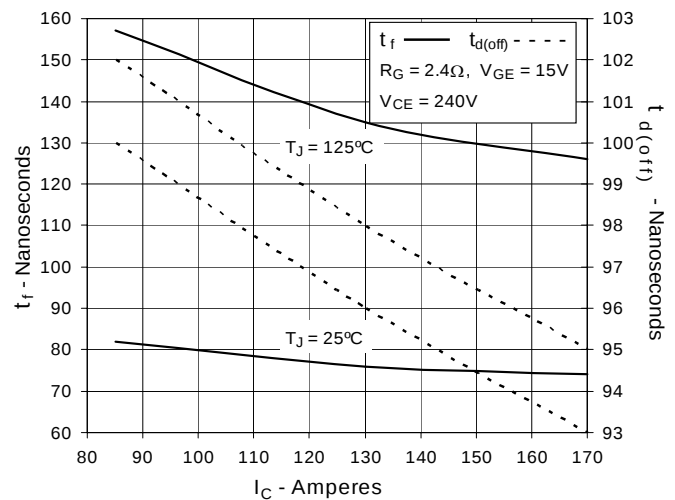
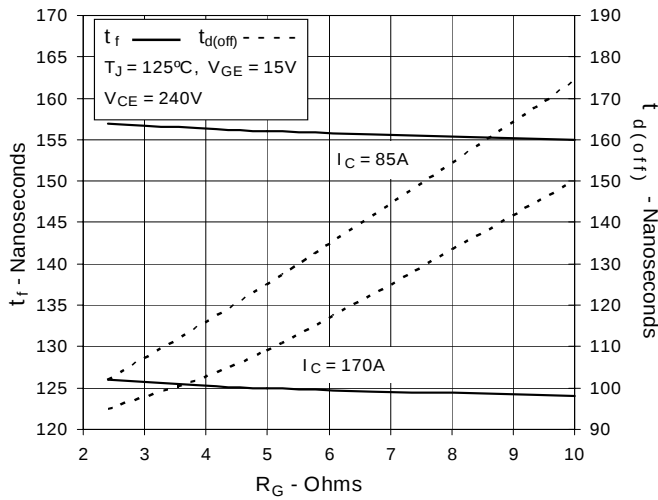
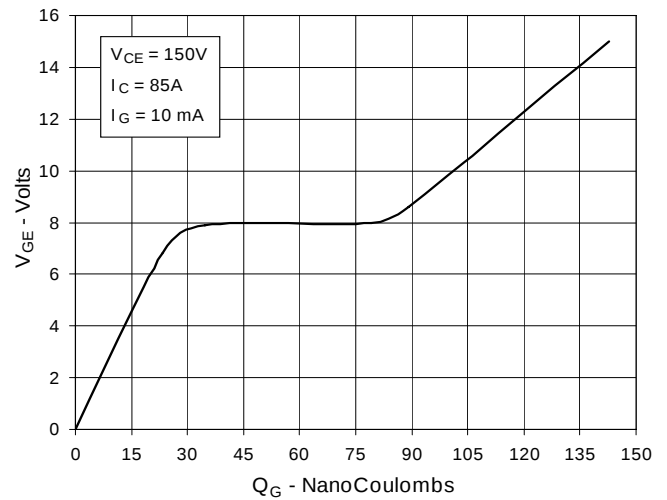
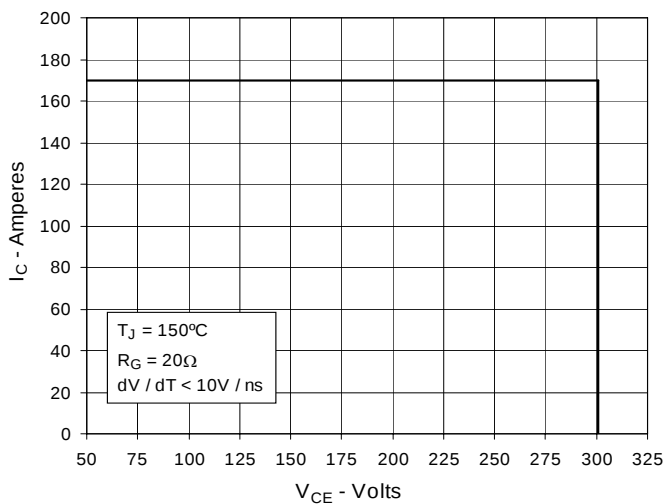
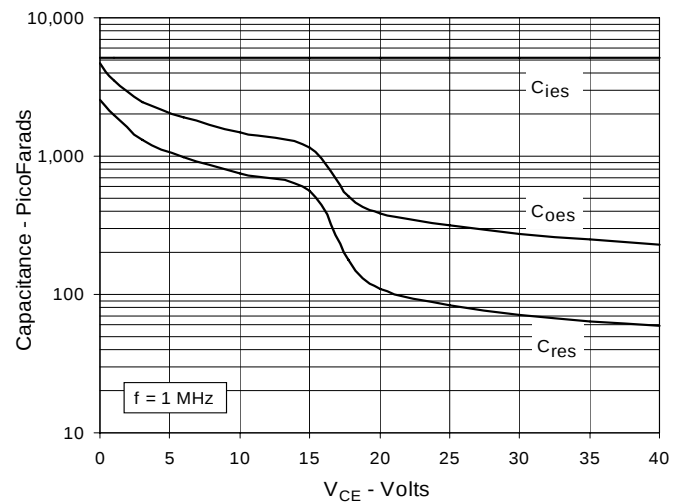
Fig. 7. Transconductance

Fig. 8. Resistive Turn-on Rise Time vs. Junction Temperature

Fig. 9. Resistive Turn-on Rise Time vs. Collector Current

Fig. 10. Resistive Turn-on Switching Times vs. Gate Resistance

Fig. 11. Resistive Turn-off Switching Times vs. Junction Temperature

Fig. 12. Resistive Turn-off Switching Times vs. Collector Current


Fig. 13. Resistive Turn-off Switching Times vs. Gate Resistance

Fig. 14. Gate Charge

Fig. 15. Reverse-Bias Safe Operating Area

Fig. 16. Capacitance

Fig. 17. Maximum Transient Thermal Resistance
