IXYS

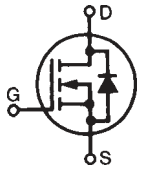
Preliminary Technical Information

TrenchMV™ Power MOSFET

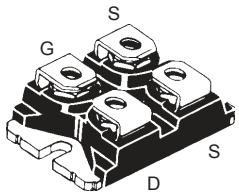
IXTN200N10T

V_{DSS} = 100V
I_{D25} = 200A
$R_{DS(on)}$ ≤ 5.5mΩ

N-Channel Enhancement Mode
Avalanche Rated



miniBLOC, SOT-227 B
E153432



G = Gate D = Drain
S = Source

Either Source terminal at miniBLOC can be used as Main or Kelvin Source

Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 175°C		100	V
V_{DGR}	T_J = 25°C to 175°C, R_{GS} = 1MΩ		100	V
V_{GSS}	Continuous		±20	V
V_{GSM}	Transient		± 30	V
I_{D25}	T_C = 25°C		200	A
I_{LRMS}	External lead current limit		100	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}		500	A
I_A	T_C = 25°C		40	A
E_{AS}	T_C = 25°C		1.5	J
P_D	T_C = 25°C		550	W
T_J			-55 ... +175	°C
T_{JM}			175	°C
T_{stg}			-55 ... +175	°C
T_L	1.6mm (0.062 in.) from case for 10s		300	°C
V_{ISOL}	50/60 Hz, RMS	t = 1min	2500	V~
	I_{ISOL} ≤ 1mA	t = 1s	3000	V~
M_d	Mounting torque		1.5/13	Nm/lb.in.
	Terminal connection torque		1.3/11.5	Nm/lb.in.
Weight			30	g

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	100			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250μA	2.5		4.5	V
I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±200	nA
I_{DSS}	$V_{DS} = V_{DSS}$			5	μA
	V_{GS} = 0V, T_J = 150°C			250	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 50A, Note 1			5.5	mΩ

Features

- International standard package
- miniBLOC, with Aluminium nitride isolation
- Avalanche Rated
- Low $R_{DS(ON)}$ and Q_G
- Low package inductance
- Fast intrinsic Rectifier

Advantages

- Low gate charge drive requirement
- High power density

Applications

- DC-DC coverters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC and DC motor drives
- Uninterrupted power supplies
- High speed power switching applications

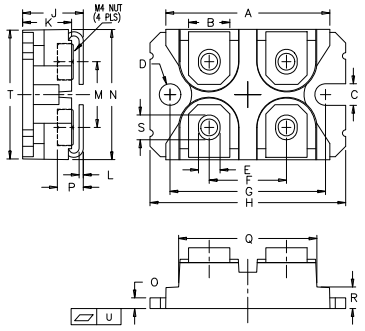
Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10V, I_D = 60A, Note 1	60	96		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		9400		pF
C_{oss}			1087		pF
C_{rss}			140		pF
$t_{d(on)}$	**Resistive Switching Times**		35		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 50A		31		ns
$t_{d(off)}$	R_G = 3.3Ω (External)		45		ns
t_f			34		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 25A		152		nC
Q_{gs}			47		nC
Q_{gd}			47		nC
R_{thJC}				0.27	°C/W
R_{thCS}			0.05		°C/W

Source-Drain Diode

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			200	A
I_{SM}	Repetitive, pulse width limited by T_{JM}			500	A
V_{SD}	I_F = 50A, V_{GS} = 0V, Note 1			1.0	V
t_{rr}	I_F = 100A, -di/dt = 100A/μs, V_R = 50V		76		ns
I_{RM}	V_{GS} = 0V		5.4		A
Q_{RM}			205		nC

Note 1: Pulse test, t ≤ 300μs; duty cycle, d ≤ 2%.

SOT-227B Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

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.

Fig. 1. Output Characteristics @ 25ºC

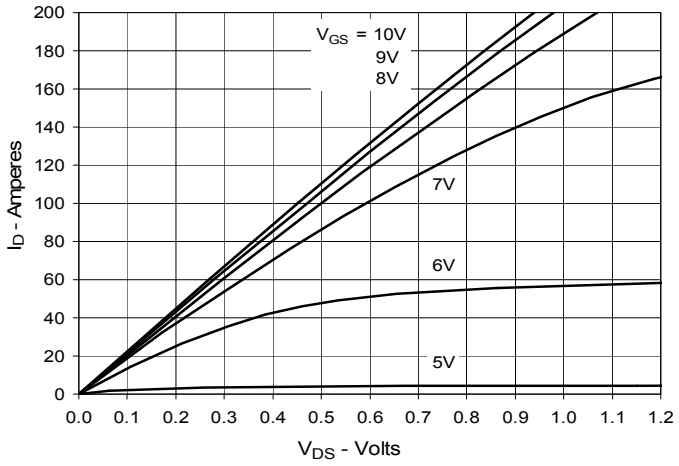


Fig. 2. Extended Output Characteristics @ 25ºC

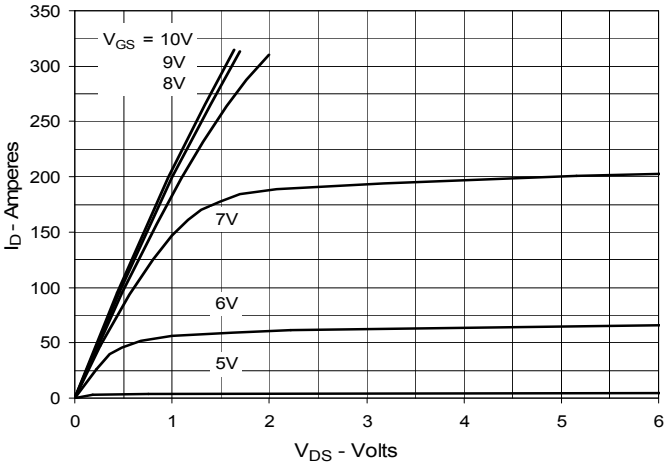


Fig. 3. Output Characteristics @ 150ºC

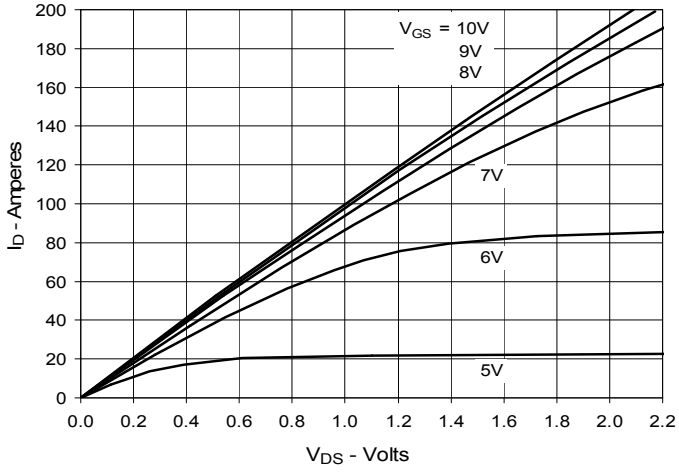


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 100A Value vs. Junction Temperature

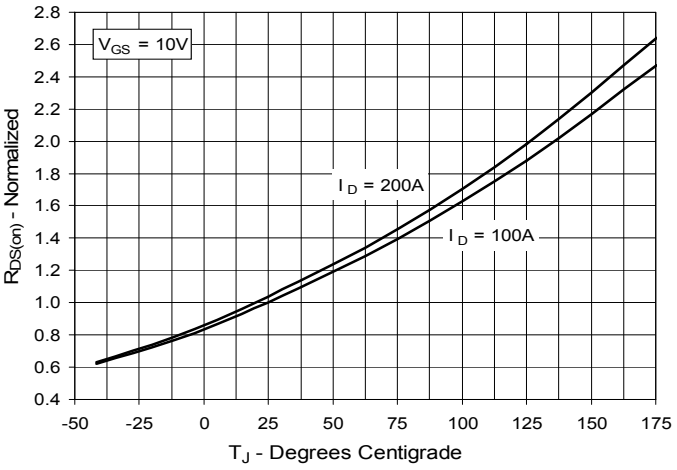


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 100A Value vs. Drain Current

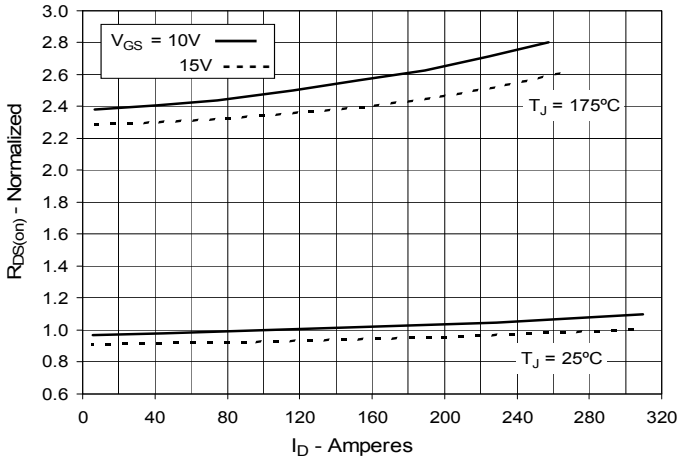


Fig. 6. Drain Current vs. Case Temperature

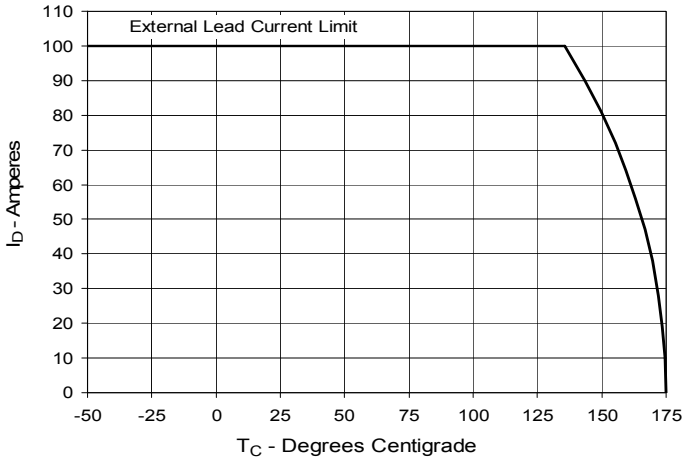


Fig. 7. Input Admittance

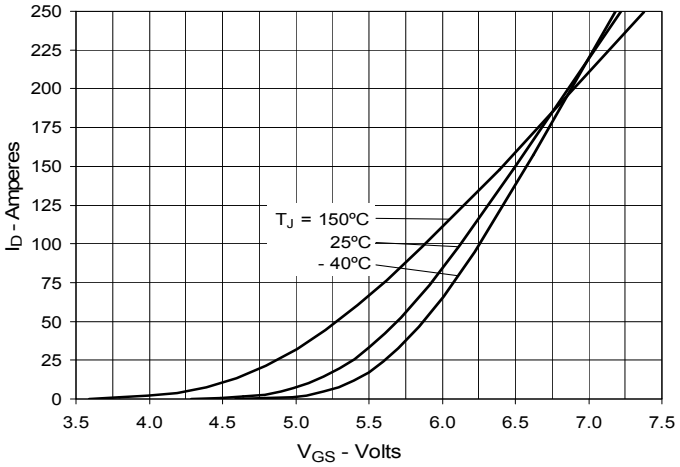


Fig. 8. Transconductance

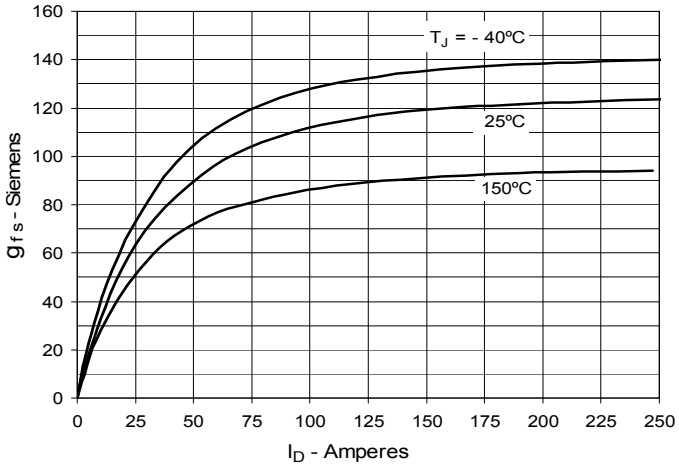


Fig. 9. Forward Voltage Drop of Intrinsic Diode

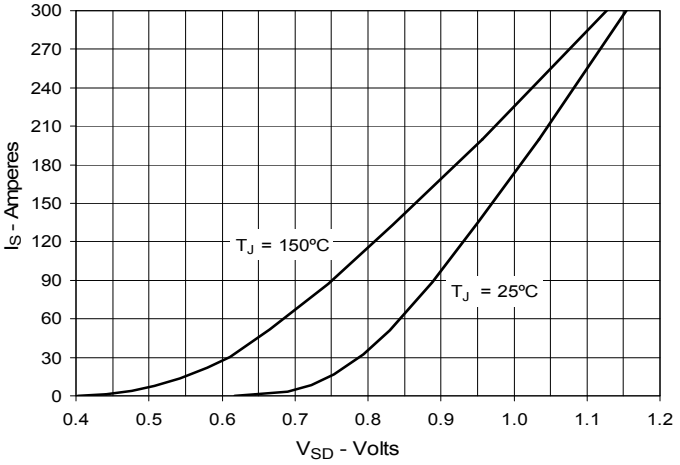


Fig. 10. Gate Charge

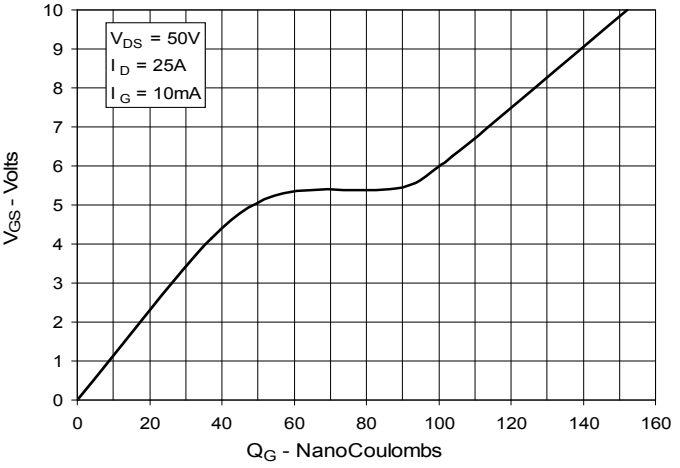


Fig. 11. Capacitance

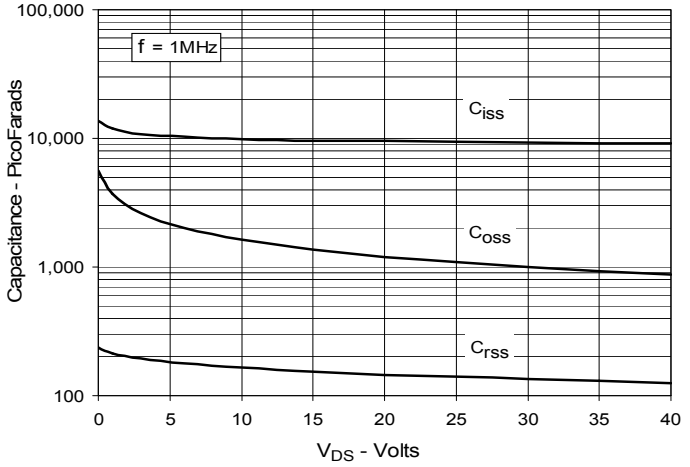


Fig. 12. Maximum Transient Thermal Impedance

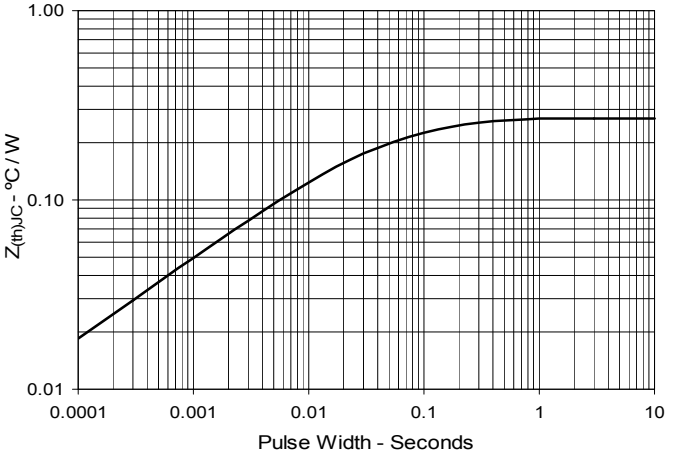


Fig. 13. Resistive Turn-on Rise Time vs. Junction Temperature

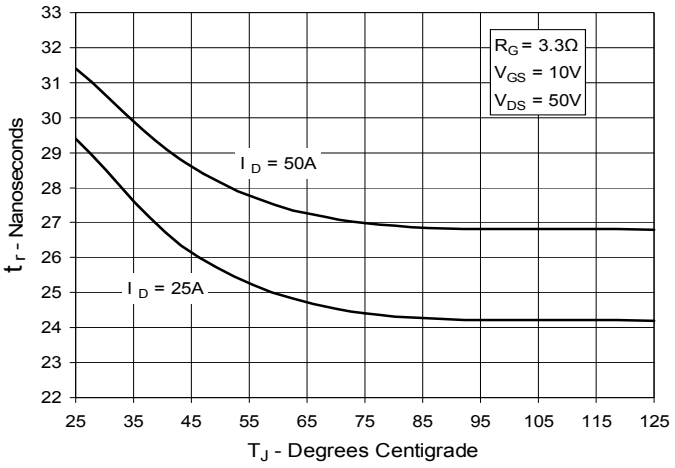


Fig. 14. Resistive Turn-on Rise Time vs. Drain Current

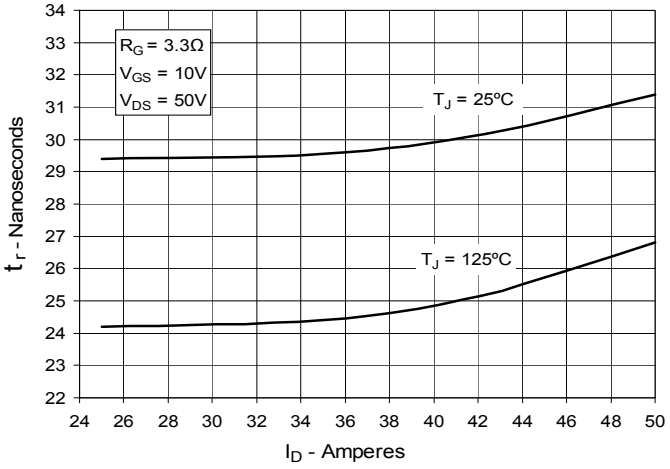


Fig. 15. Resistive Turn-on Switching Times vs. Gate Resistance

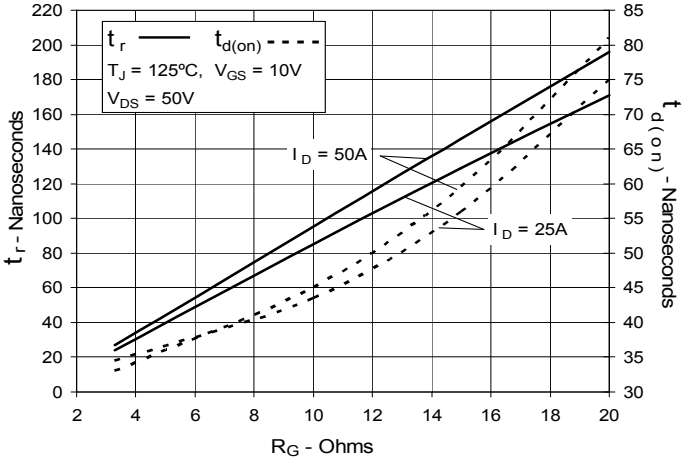


Fig. 16. Resistive Turn-off Switching Times vs. Junction Temperature

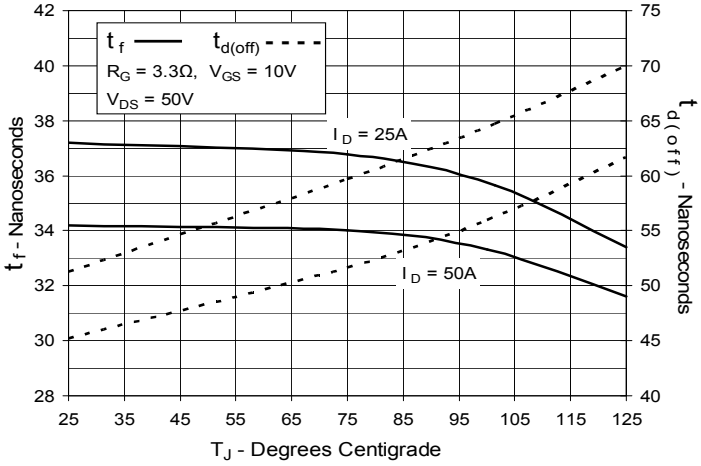


Fig. 17. Resistive Turn-off Switching Times vs. Drain Current

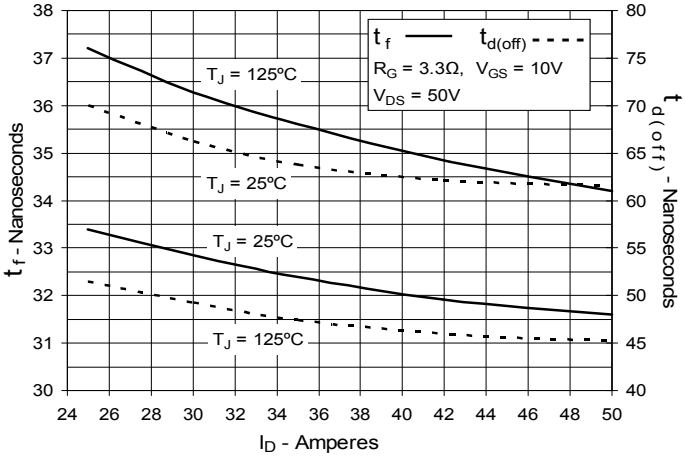


Fig. 18. Resistive Turn-off Switching Times vs. Gate Resistance