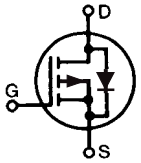
IXYS

TrenchP™ Power MOSFETs

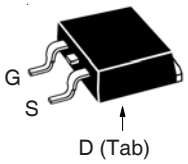
IXTA24P085T
IXTP24P085T

V_{DSS} = - 85V
I_{D25} = - 24A
$R_{DS(on)}$ ≤ 65mΩ

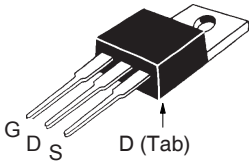
P-Channel Enhancement Mode
Avalanche Rated



TO-263 AA (IXTA)



TO-220AB (IXTP)



G = Gate D = Drain
S = Source Tab = Drain

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	- 85	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	- 85	V
V_{GSS}	Continuous	±15	V
V_{GSM}	Transient	±25	V
I_{D25}	T_C = 25°C	- 24	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	- 80	A
I_A	T_C = 25°C	- 24	A
E_{AS}	T_C = 25°C	200	mJ
P_D	T_C = 25°C	83	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	1.6mm (0.062 in.) from Case for 10s	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
M_d	Mounting Torque (TO-220)	1.13/10	Nm/lb.in.
Weight	TO-220	3.0	g
	TO-263	2.5	g

Features

- International Standard Packages
- Avalanche Rated
- Extended FBSOA
- Fast Intrinsic Diode
- Low $R_{DS(ON)}$ and Q_G

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- High-Side Switching
- Push Pull Amplifiers
- DC Choppers
- Automatic Test Equipment
- Current Regulators
- Battery Charger Applications

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = - 250μA	- 85			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = - 250μA	- 2.5		- 4.5	V
I_{GSS}	V_{GS} = ±15V, V_{DS} = 0V			±50	nA
I_{DSS}	$V_{DS} = V_{DSS}$, V_{GS} = 0V			- 3	μA
	T_J = 125°C			-100	μA
$R_{DS(on)}$	V_{GS} = -10V, $I_D = 0.5 \bullet I_{D25}$, Note 1			65	mΩ

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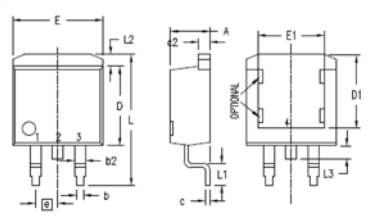
Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = -10V, I_D = 0.5 • I_{D25}, Note 1	10	16		S
C_{iss}	V_{GS} = 0V, V_{DS} = - 25V, f = 1MHz		2090		pF
C_{oss}			243		pF
C_{rss}			117		pF
$t_{d(on)}$	**Resistive Switching Times**		18		ns
t_r	V_{GS} = -10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		26		ns
$t_{d(off)}$	R_G = 10Ω (External)		53		ns
t_f			26		ns
$Q_{g(on)}$	V_{GS} = -10V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		41		nC
Q_{gs}			17		nC
Q_{gd}			11		nC
R_{thJC}				1.5	°C/W
R_{thCS}	TO-220		0.50		°C/W

Source-Drain Diode

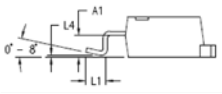
Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			- 24	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			- 96	A
V_{SD}	I_F = - 24A, V_{GS} = 0V, Note 1			-1.5	V
t_{rr}	I_F = -12A, -di/dt = -100A/μs		40		ns
Q_{RM}	V_R = - 43V, V_{GS} = 0V		72		nC
I_{RM}			- 3.6		A

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

TO-263 Outline

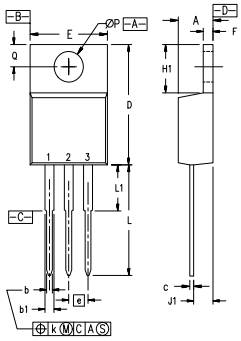


Pins:
1 - Gate
2,4 - Drain
3 - Source



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.160	.190	4.06	4.83
A1	.080	.110	2.03	2.79
b	.020	.039	0.51	0.99
b2	.045	.055	1.14	1.40
c	.016	.029	0.40	0.74
c2	.045	.055	1.14	1.40
D	.340	.380	8.64	9.65
D1	.315	.350	8.00	8.89
E	.380	.410	9.65	10.41
E1	.245	.320	6.22	8.13
e	.100 BSC		2.54 BSC	
L	.575	.625	14.61	15.88
L1	.090	.110	2.29	2.79
L2	.040	.055	1.02	1.40
L3	.050	.070	1.27	1.78
L4	0	.005	0	0.13

TO-220 Outline



Pins: 1 - Gate 2 - Drain
3 - Source

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

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 4,860,072 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

Fig. 1. Output Characteristics @ T_J = 25ºC

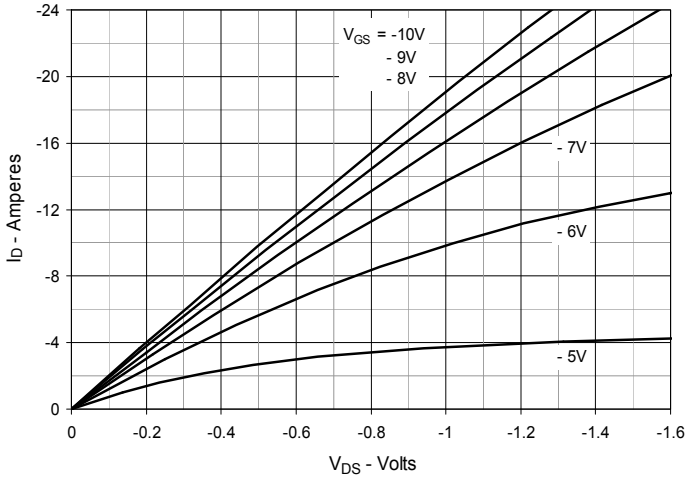


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

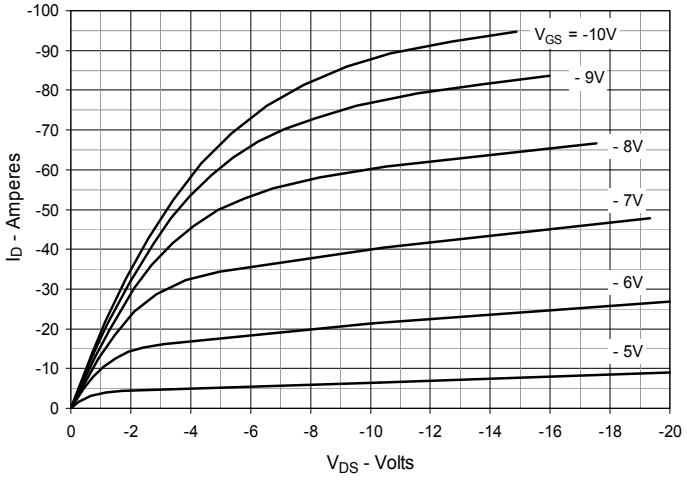


Fig. 3. Output Characteristics @ T_J = 125ºC

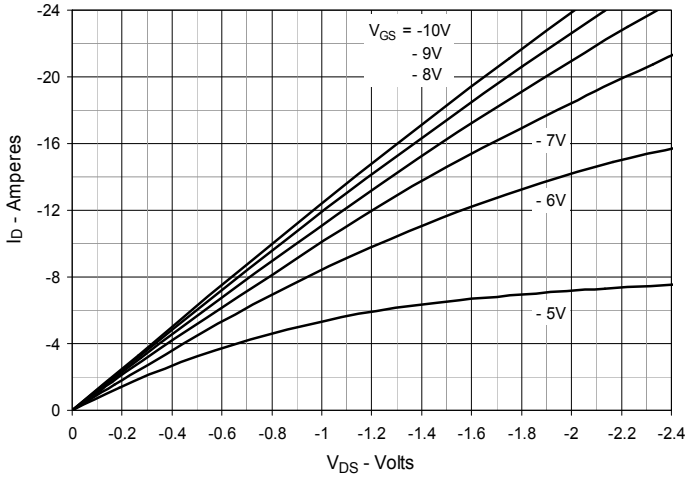


Fig. 4. $R_{DS(on)}$ Normalized to I_D = -12A Value vs. Junction Temperature

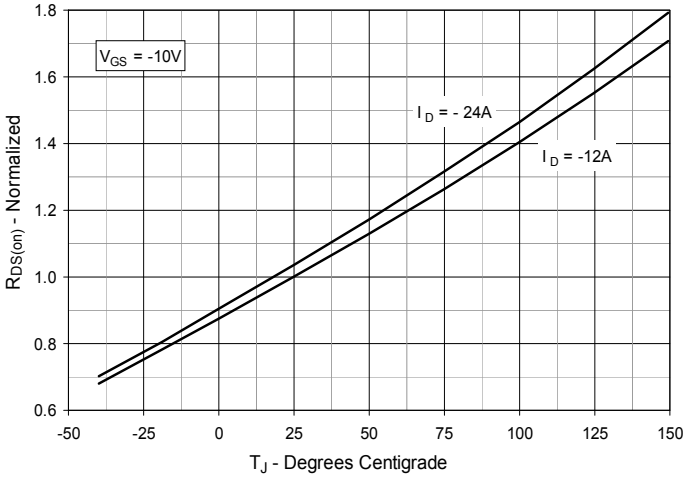


Fig. 5. $R_{DS(on)}$ Normalized to I_D = -12A Value vs. Drain Current

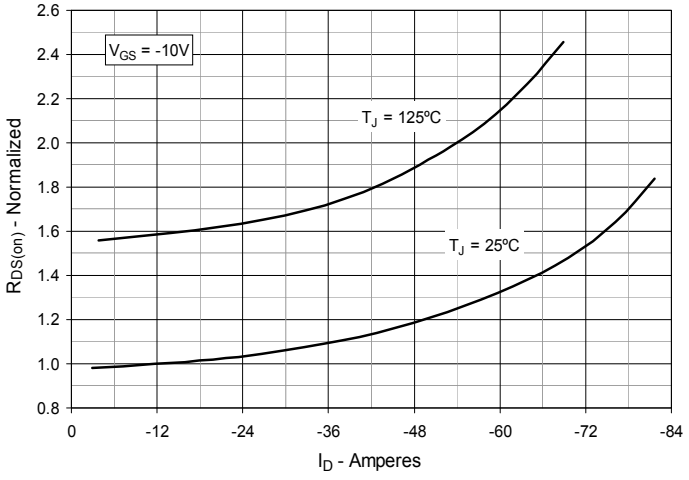
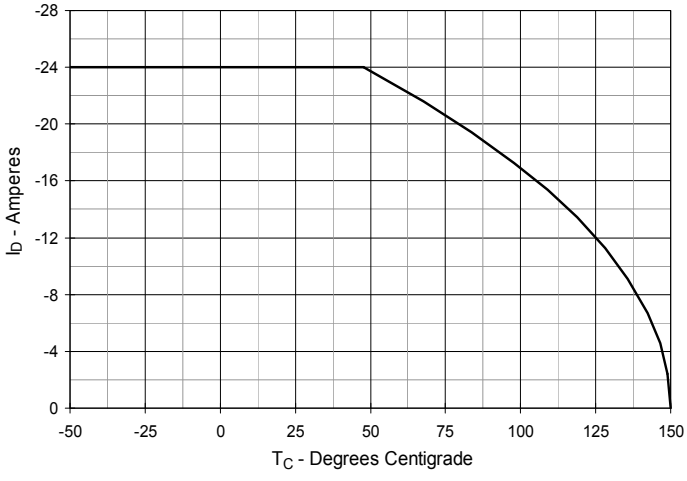


Fig. 6. Maximum Drain Current vs. Case Temperature



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Fig. 7. Input Admittance

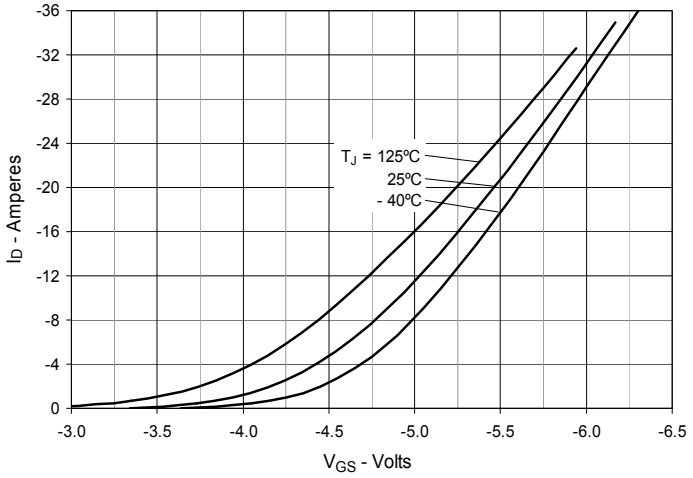


Fig. 8. Transconductance

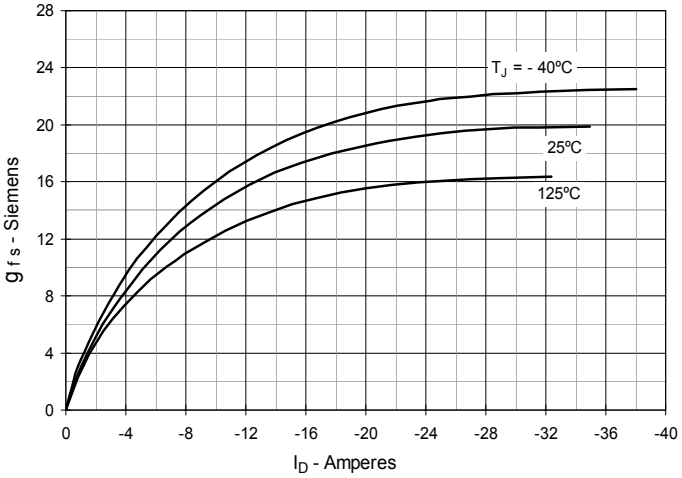


Fig. 9. Forward Voltage Drop of Intrinsic Diode

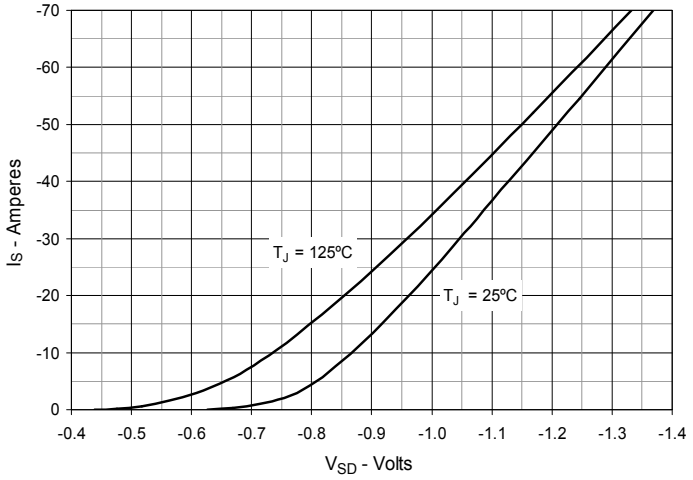


Fig. 10. Gate Charge

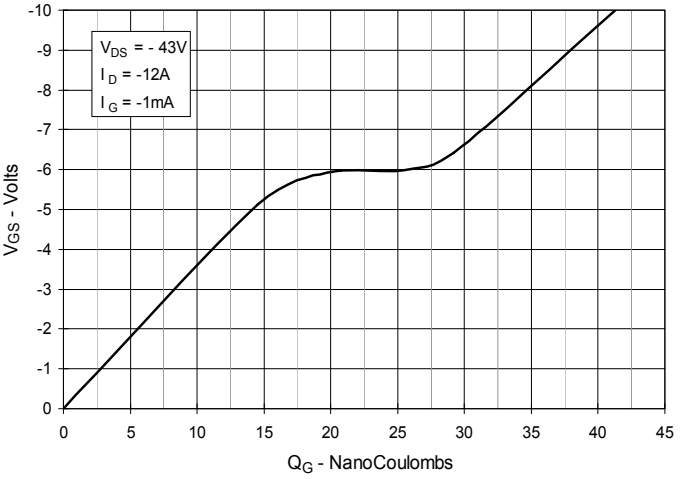


Fig. 11. Capacitance

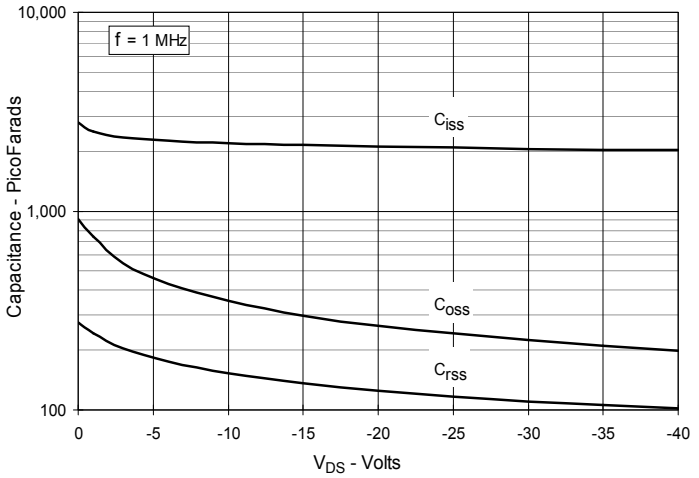
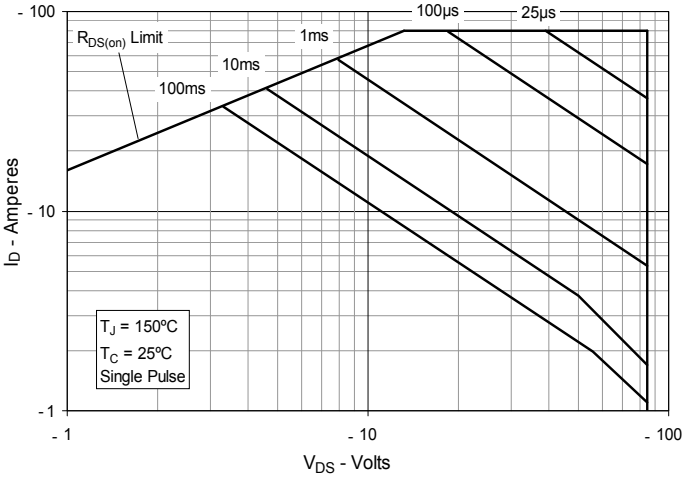


Fig. 12. Forward-Bias Safe Operating Area



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

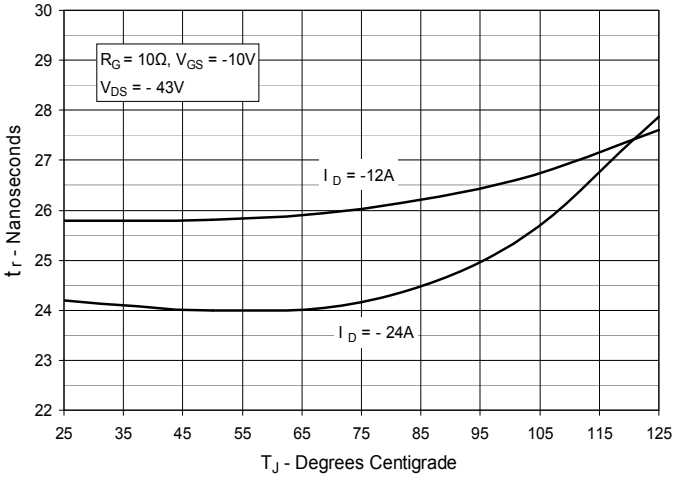


Fig. 14. Resistive Turn-on Rise Time vs. Drain Current

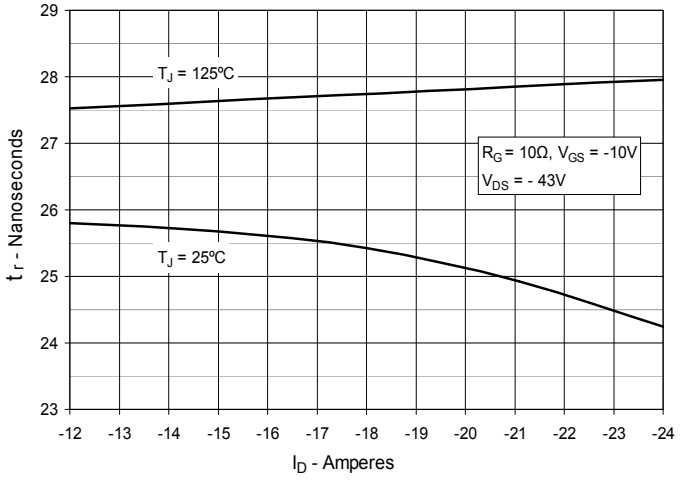


Fig. 15. Resistive Turn-on Switching Times vs. Gate Resistance

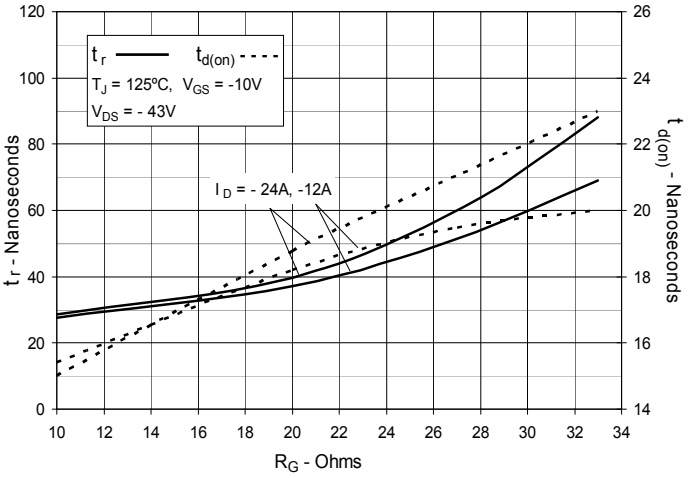


Fig. 16. Resistive Turn-off Switching Times vs. Junction Temperature

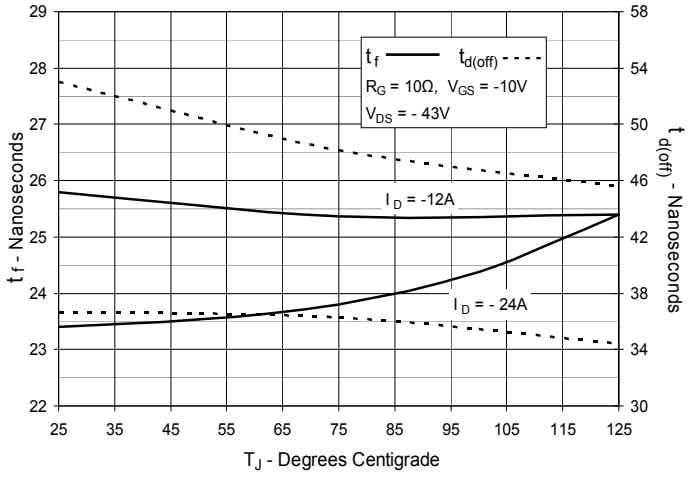


Fig. 17. Resistive Turn-off Switching Times vs. Drain Current

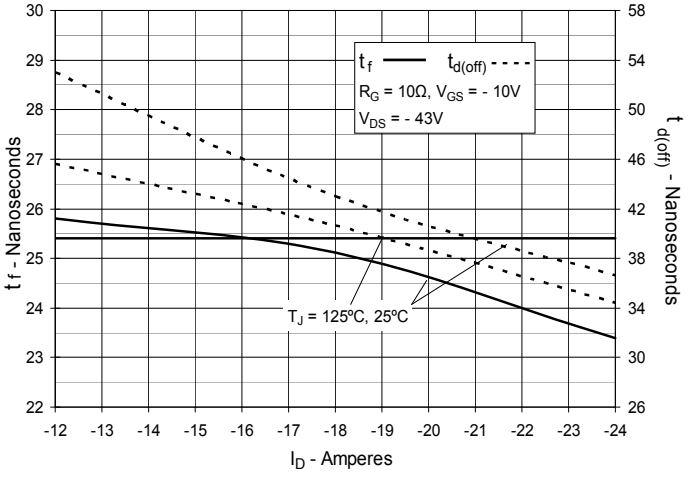
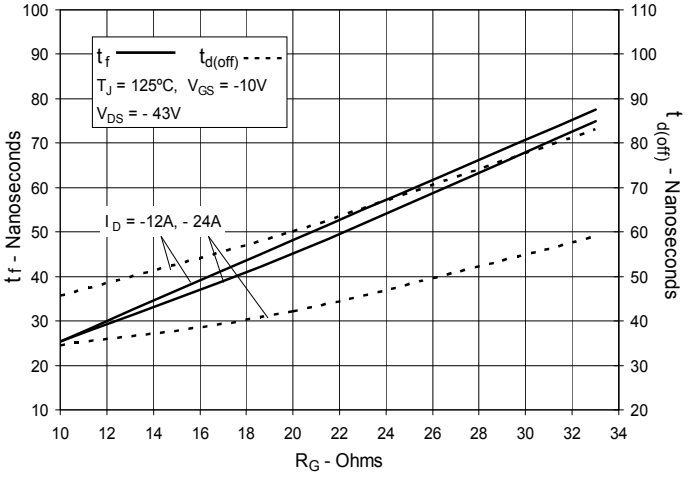
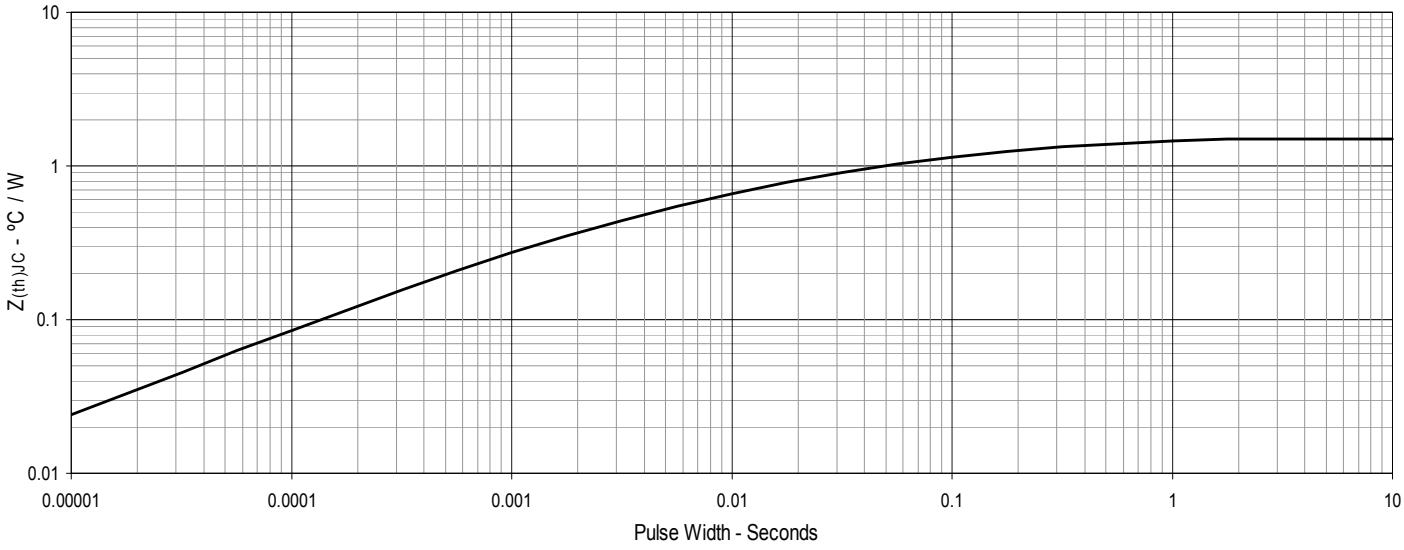


Fig. 18. Resistive Turn-off Switching Times vs. Gate Resistance



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Fig. 19. Maximum Transient Thermal Impedance





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