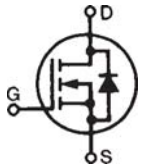
IXYS

TrenchMV™ Power MOSFET

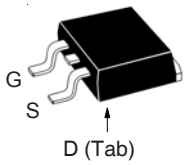
IXTA80N10T
IXTP80N10T

V_{DSS} = 100V
I_{D25} = 80A
$R_{DS(on)}$ ≤ 14mΩ

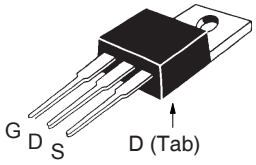
N-Channel Enhancement Mode
Avalanche Rated
Fast Intrinsic Diode



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 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	80	A
I_{DM}	T_C = 25°C, Pulse Width Limited by T_{JM}	220	A
I_A	T_C = 25°C	25	A
E_{AS}	T_C = 25°C	400	mJ
P_D	T_C = 25°C	230	W
dV/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, $T_J \le 175°C$	10	V/ns
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
T_{SOLD}	Plastic Body for 10s	260	°C
M_d	Mounting Torque (TO-220)	1.13 / 10	Nm/lb.in.
Weight	TO-263	2.5	g
	TO-220	3.0	g

Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 250μA	105			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 100μA	2.5		5.0	V
I_{GSS}	V_{GS} = ± 20V, V_{DS} = 0V			± 200	nA
I_{DSS}	V_{DS} = 105V, V_{GS}= 0V			5	μA
	T_J = 150°C			150	μA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 25A, Note 1 & 2			14	mΩ

Features

- International Standard Packages
- 175°C Operating Temperature
- Avalanche Rated
- High Current Handling Capability
- Fast Intrinsic Diode
- Low $R_{DS(on)}$

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- Automotive
  - Motor Drives
  - DC/DC Conversion
  - 42V Power Bus
  - ABS Systems
- DC/DC Converters and Off-Line UPS
- Primary Switch for 24V and 48V Systems
- High Current Switching Applications
- Distributed Power Architechtures and VRMs
- Electronic Valve Train Systems

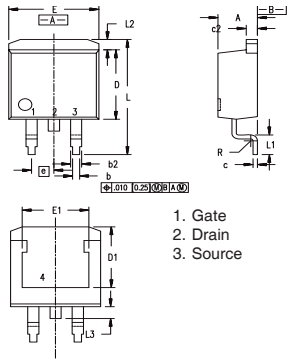
Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10V, I_D = 0.5 • I_{D25}, Note 1	33	55		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		3040		pF
C_{oss}			420		pF
C_{rss}			90		pF
$t_{d(on)}$	**Resistive Switching Times**		31		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 10A		54		ns
$t_{d(off)}$	R_G = 15Ω (External)		40		ns
t_f			48		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 25A		60		nC
Q_{gs}			21		nC
Q_{gd}			15		nC
R_{thJC}				0.65	°C/W
R_{thCS}			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			80	A
I_{SM}	Repetitive, Pulse Width Limited by T_{JM}			220	A
V_{SD}	I_F = 25A, V_{GS} = 0V, Note 1			1.1	V
t_{rr}	I_F = 25A, -di/dt = 100A/μs V_R = 50V, V_{GS} = 0V		100		ns

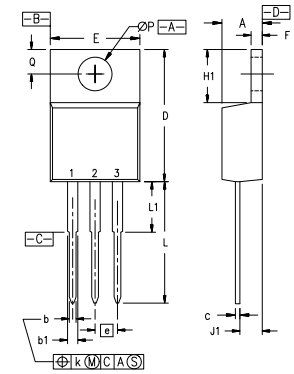
Notes 1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.
2. On through-kole packages $R_{DS(on)}$ Kelvin test contact location must be 5 mm or less from the package body.

TO-263 (IXTA) Outline



Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	4.06	4.83	.160	.190
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.40	0.74	.016	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	8.00	8.89	.280	.320
E	9.65	10.41	.380	.405
E1	6.22	8.13	.270	.320
e	2.54	BSC	.100	BSC
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.13	0	.005

TO-220 (IXTP) Outline



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

SYM	INCHES MIN	MAX	MILLIMETERS MIN	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

Fig. 1. Output Characteristics @ T_J = 25ºC

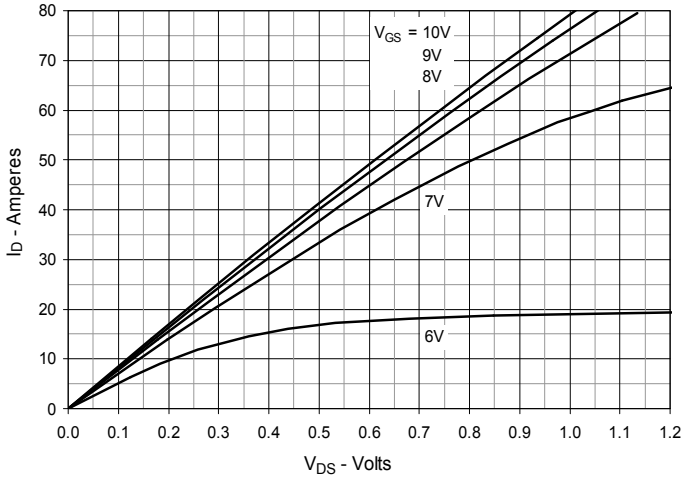


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

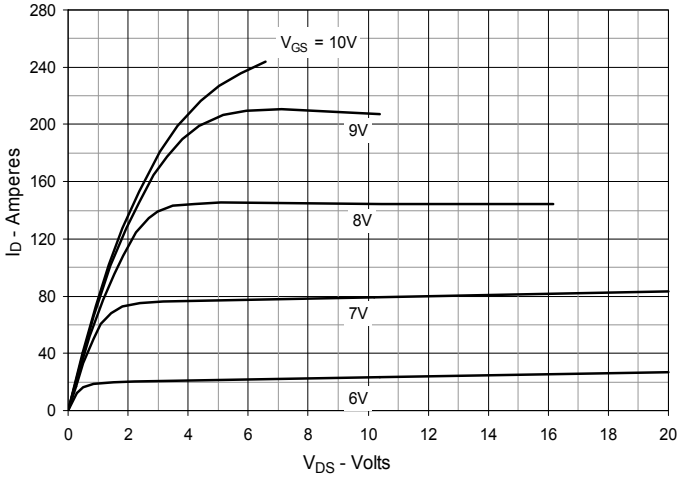


Fig. 3. Output Characteristics @ T_J = 150ºC

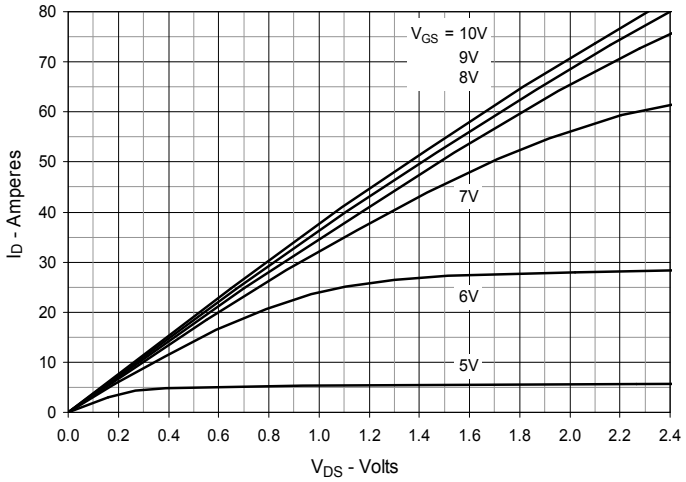


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 40A Value vs. Junction Temperature

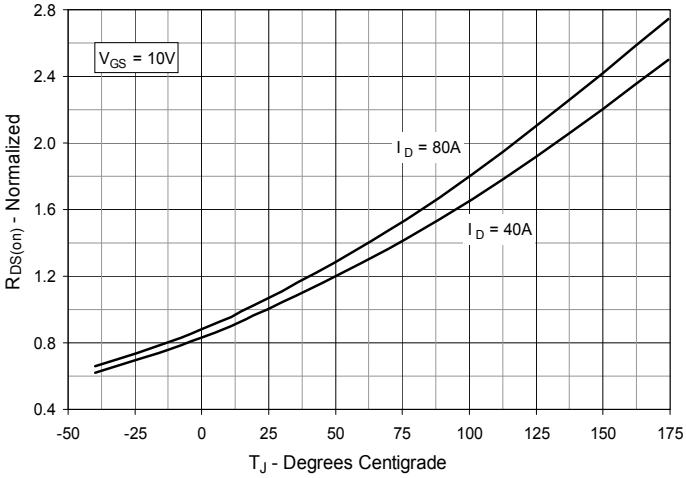


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 40A Value vs. Drain Current

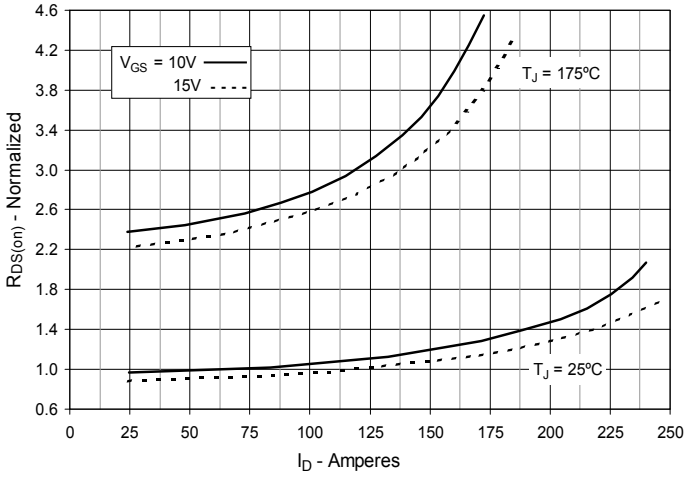


Fig. 6. Drain Current vs. Case Temperature

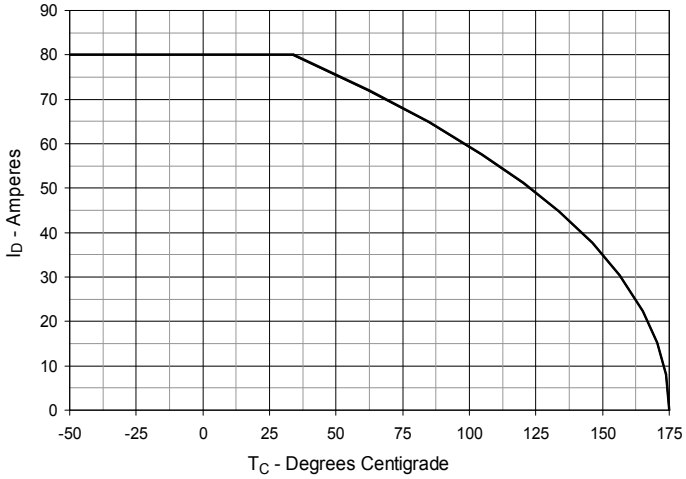


Fig. 7. Input Admittance

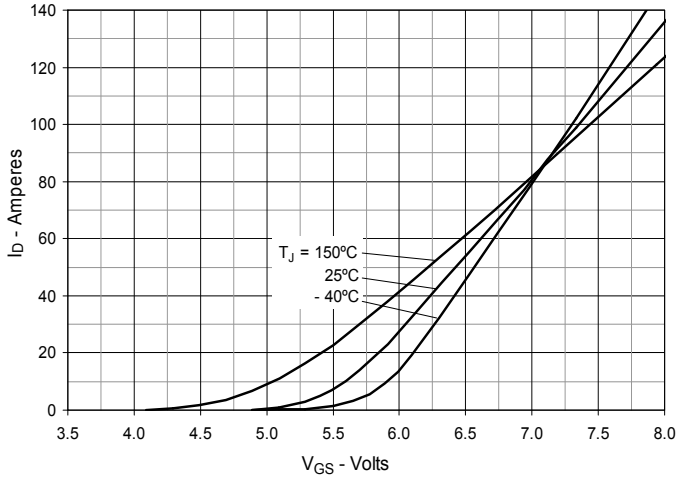


Fig. 8. Transconductance

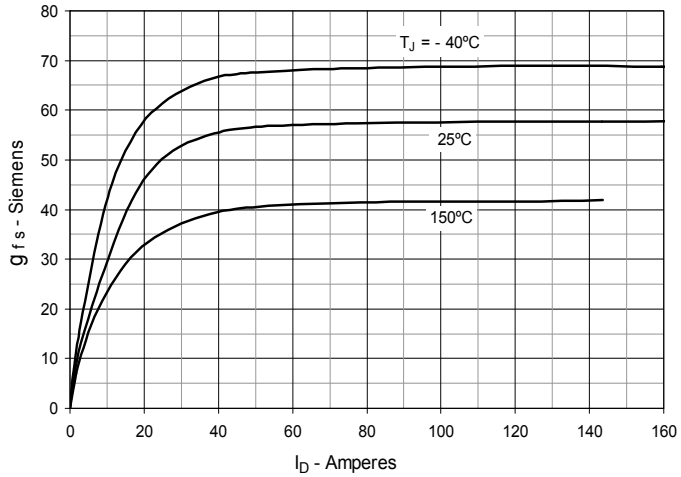


Fig. 9. Forward Voltage Drop of Intrinsic Diode

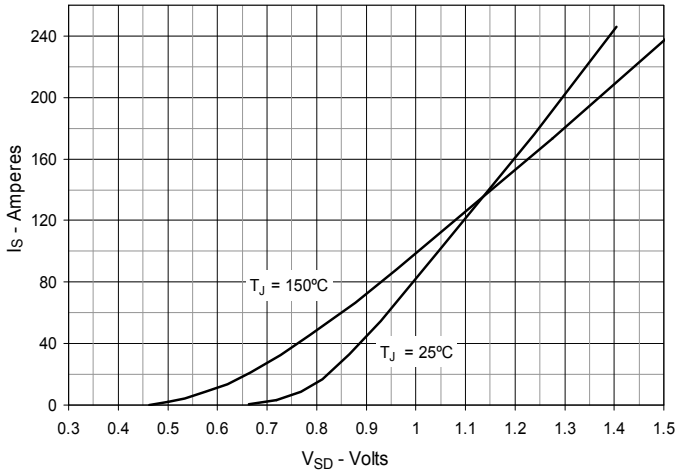


Fig. 10. Gate Charge

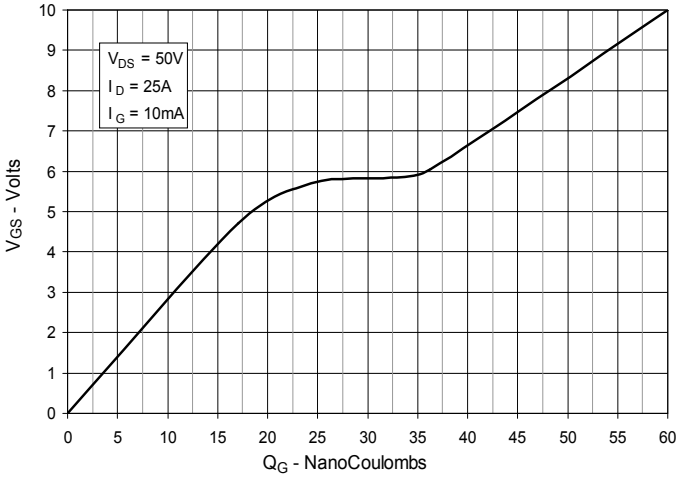


Fig. 11. Capacitance

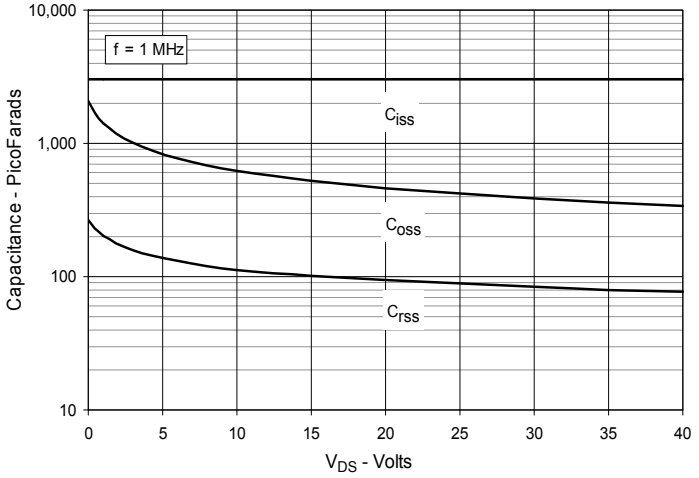


Fig. 12. Maximum Transient Thermal Impedance

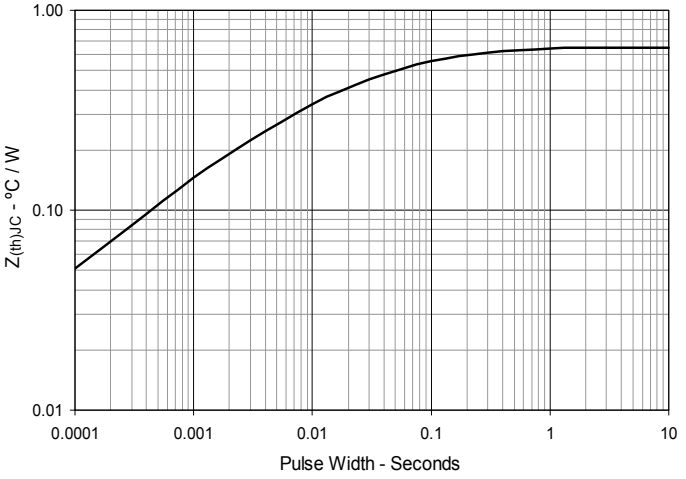


Fig. 13. Resistive Turn-on Rise Time vs. Junction Temperature

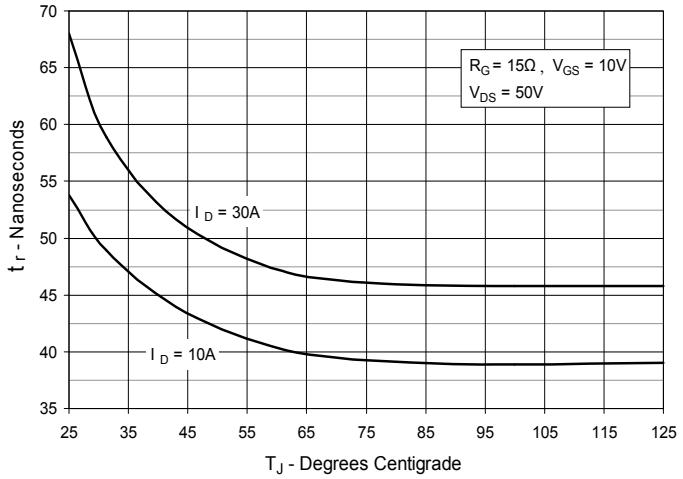


Fig. 14. Resistive Turn-on Rise Time vs. Drain Current

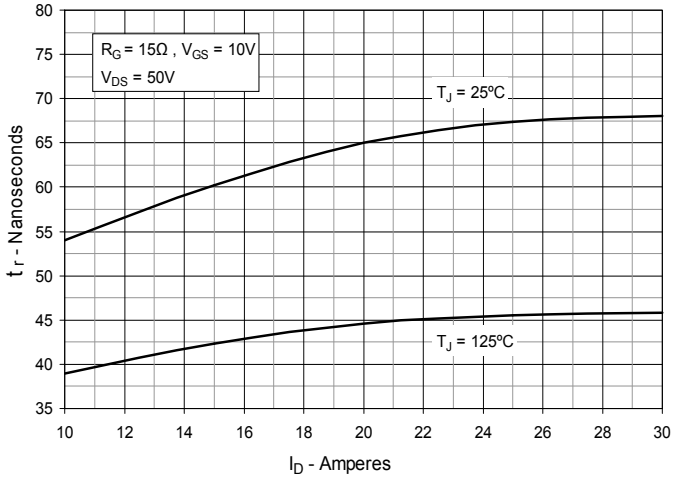


Fig. 15. Resistive Turn-on Switching Times vs. Gate Resistance

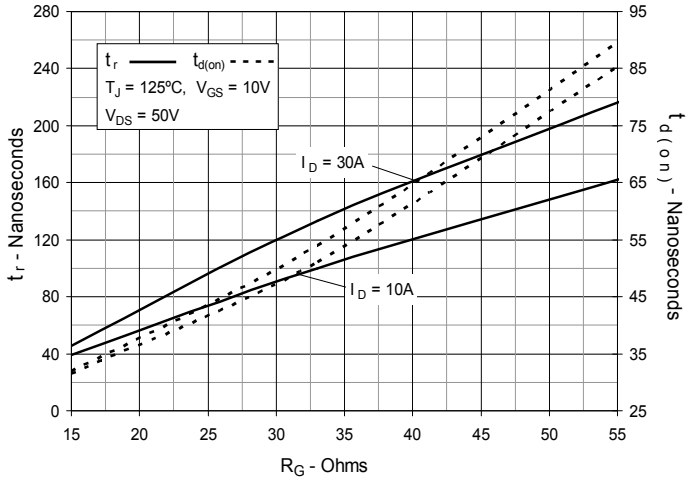


Fig. 16. Resistive Turn-off Switching Times vs. Junction Temperature

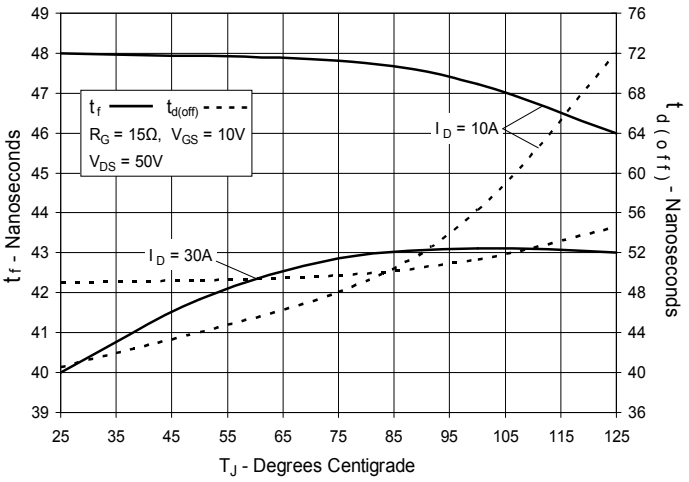


Fig. 17. Resistive Turn-off Switching Times vs. Drain Current

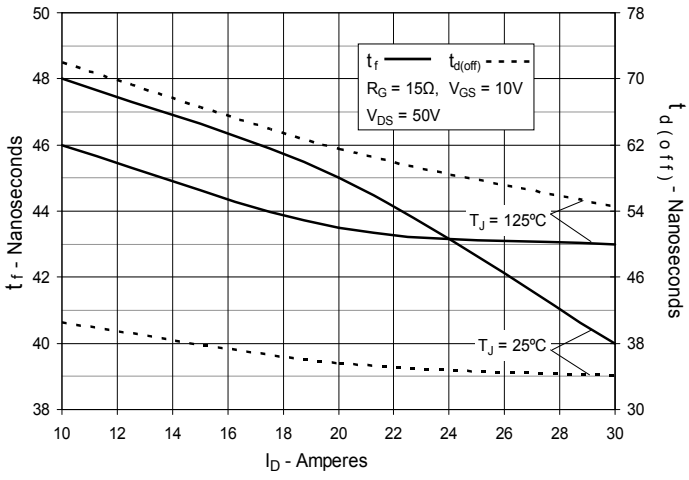


Fig. 18. Resistive Turn-off Switching Times vs. Gate Resistance