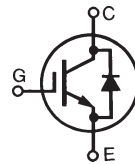


High Voltage, High Gain BIMOSFET™ Monolithic Bipolar MOS Transistor

IXBX25N250



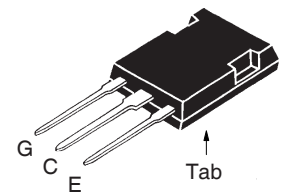
$$V_{CES} = 2500V$$

$$I_{C90} = 25A$$

$$V_{CE(sat)} \leq 3.3V$$

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_C = 25^\circ C$ to $150^\circ C$	2500	V
V_{CGR}	$T_J = 25^\circ C$ to $150^\circ C$, $R_{GE} = 1M\Omega$	2500	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ C$	55	A
I_{C90}	$T_C = 90^\circ C$	25	A
I_{CM}	$T_C = 25^\circ C$, 1ms	180	A
SSOA	$V_{GE} = 15V$, $T_{VJ} = 125^\circ C$, $R_G = 4.7\Omega$	$I_{CM} = 80$	A
(RBSOA)	Clamped Inductive Load	$V_{CES} \leq 2000$	V
P_C	$T_C = 25^\circ C$	300	W
T_J		-55 ... +150	$^\circ C$
T_{JM}		150	$^\circ C$
T_{stg}		-55 ... +150	$^\circ C$
T_L	1.6mm (0.062 in.) From Case for 10s	300	$^\circ C$
T_{SOLD}	Plastic Body for 10 seconds	260	$^\circ C$
F_C	Mounting Force	20..120 / 4.5..27	N/lb.
Weight		6	g

PLUS247™



G = Gate E = Emitter
C = Collector Tab = Collector

Features

- High Blocking Voltage
- International Standard Package
- Low Conduction Losses

Advantages

- Low Gate Drive Requirement
- High Power Density

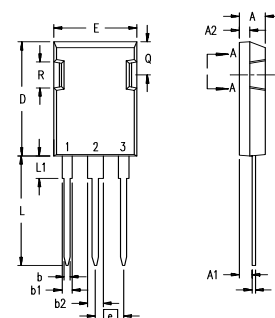
Applications

- Switch-Mode and Resonant-Mode Power Supplies
- Uninterruptible Power Supplies (UPS)
- Laser Generator
- Capacitor Discharge Circuit
- AC Switches

Symbol	Test Conditions ($T_J = 25^\circ C$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{CES}	$I_C = 250\mu A$, $V_{GE} = 0V$	2500		V
$V_{GE(th)}$	$I_C = 250\mu A$, $V_{CE} = V_{GE}$	2.5		5.0 V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$, $V_{GE} = 0V$ $T_J = 125^\circ C$			50 μA 3 mA
I_{GES}	$V_{CE} = 0V$, $V_{GE} = \pm 20V$			± 100 nA
$V_{CE(sat)}$	$I_C = I_{C90}$, $V_{GE} = 15V$, Note 1 $T_J = 125^\circ C$		3.4	3.3 V V

Symbol Test Conditions		Characteristic Values		
(T _J = 25°C Unless Otherwise Specified)		Min.	Typ.	Max.
g_{fS}	I _C = 25A, V _{CE} = 10V, Note 1	11	18	S
C_{ies}	V _{CE} = 25V, V _{GE} = 0V, f = 1MHz		2450	pF
C_{oes}			96	pF
C_{res}			35	pF
Q_g	I _C = 25A, V _{GE} = 15V, V _{CE} = 1000V		103	nC
Q_{ge}			17	nC
Q_{gc}			43	nC
t_{d(on)}	Resistive Switching times, T_J = 25°C		55	ns
t_r		I _C = 25A, V _{GE} = 15V	240	ns
t_{d(off)}		V _{CE} = 1250V, R _G = 4.7Ω	145	ns
t_f			640	ns
t_{d(on)}	Resistive Switching times, T_J = 125°C		54	ns
t_r		I _C = 25A, V _{GE} = 15V	640	ns
t_{d(off)}		V _{CE} = 1250V, R _G = 4.7Ω	140	ns
t_f			510	ns
R_{thJC}			0.42	°C/W
R_{thCS}		0.15		°C/W

PLUS 247™ (IXBX) Outline



Terminals: 1 - Gate
2 - Collector
3 - Emitter

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	.190	.205
A ₁	2.29	2.54	.090	.100
A ₂	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b ₁	1.91	2.13	.075	.084
b ₂	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	0.244
R	4.32	4.83	.170	.190

Reverse Diode

Symbol Test Conditions		Characteristic Values		
(T _J = 25°C Unless Otherwise Specified)		Min.	Typ.	Max.
V_F	I _F = 25A, V _{GE} = 0V			2.3 V
t_{rr}	I _F = 25A, -di _F /dt = 100A/μs		1.6	μs
I_{RM}		V _R = 100V, V _{GE} = 0V	37.2	

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

*Additional provisions for lead to lead voltage isolation are required at V_{DS} > 1200V.

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	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
	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	7,063,975 B2	
	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	7,071,537	

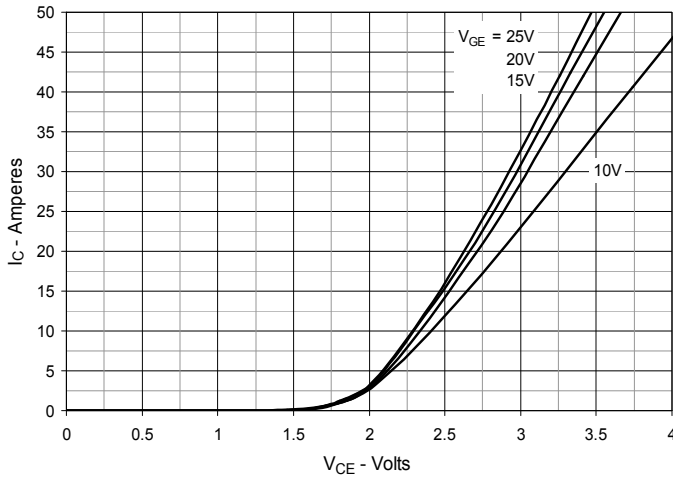
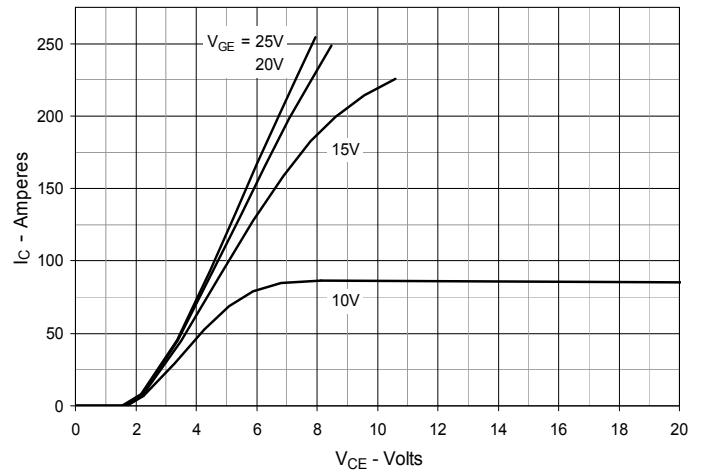
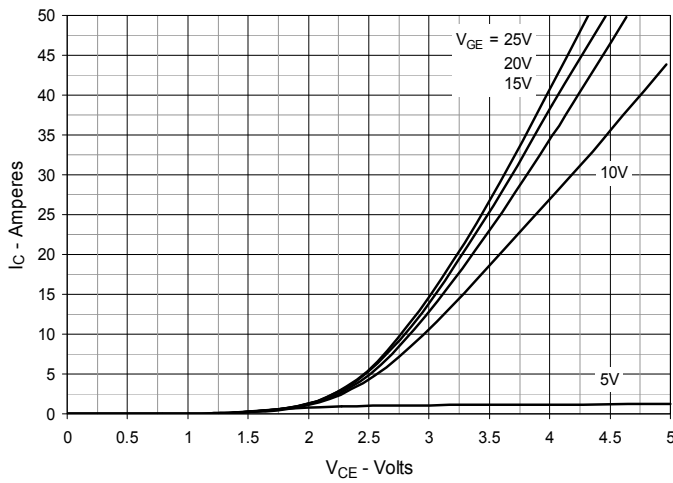
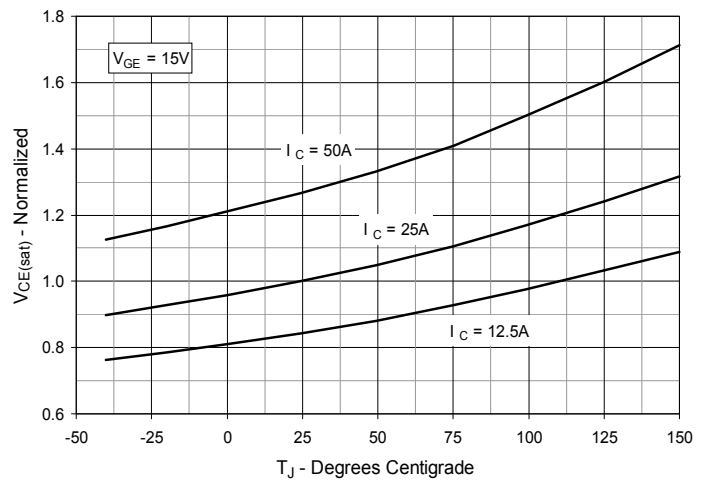
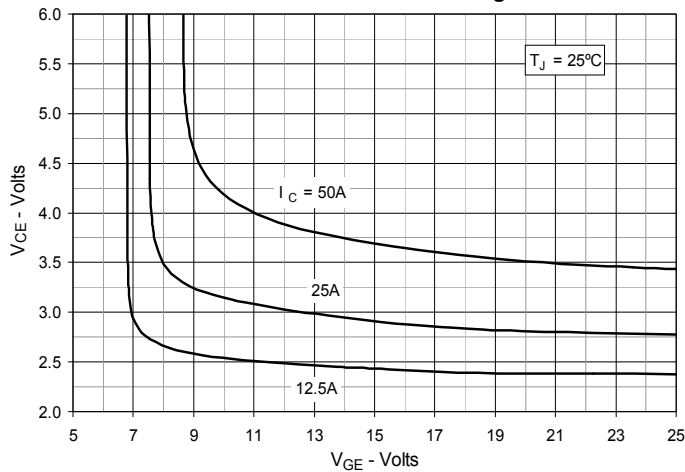
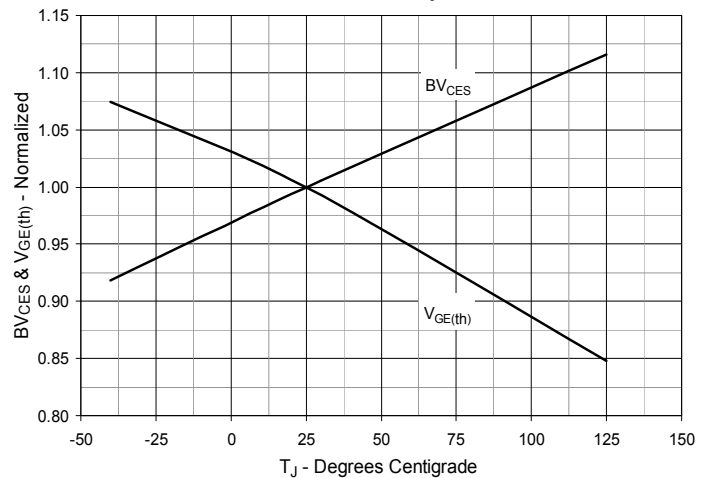
Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

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

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

Fig. 6. Breakdown & Threshold Voltages vs. Junction Temperature


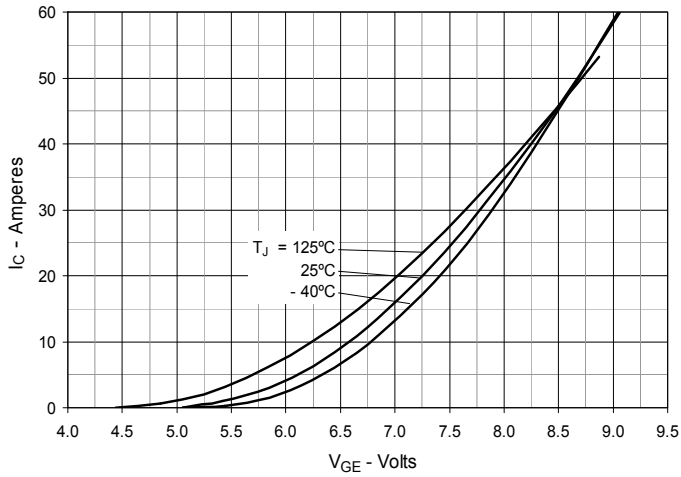
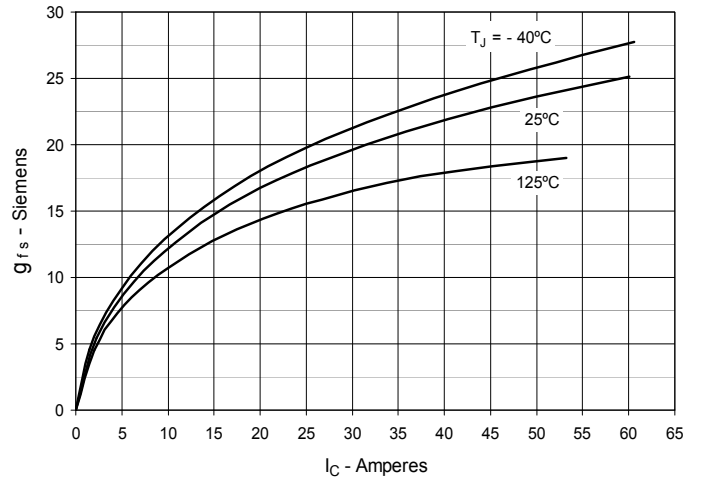
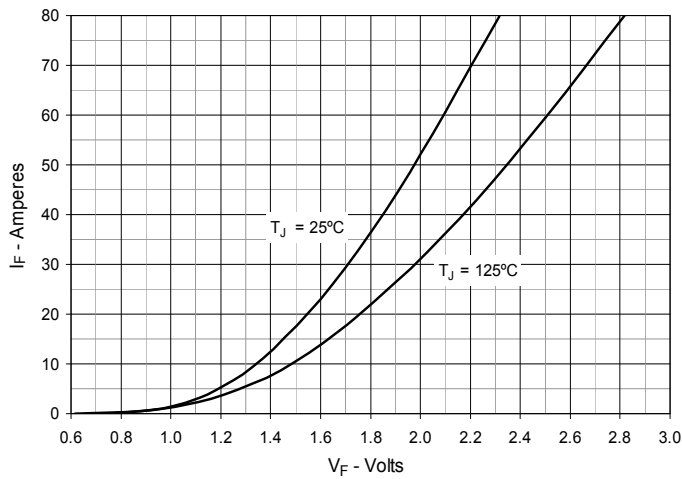
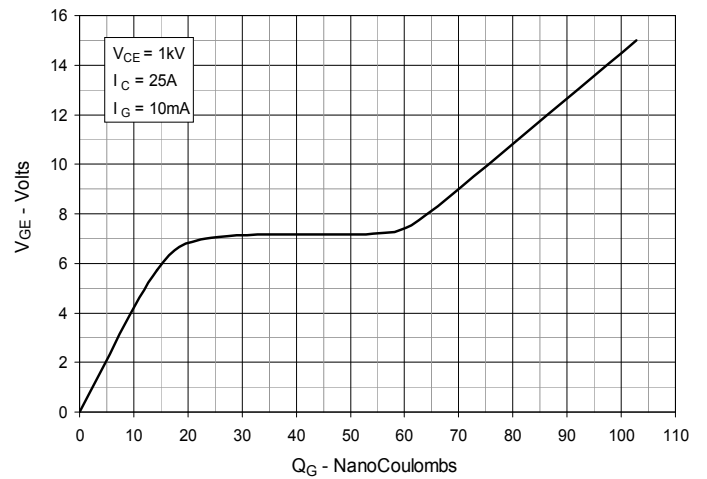
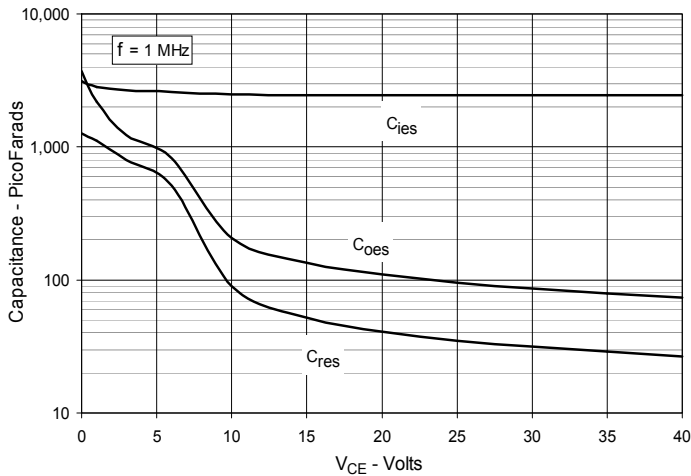
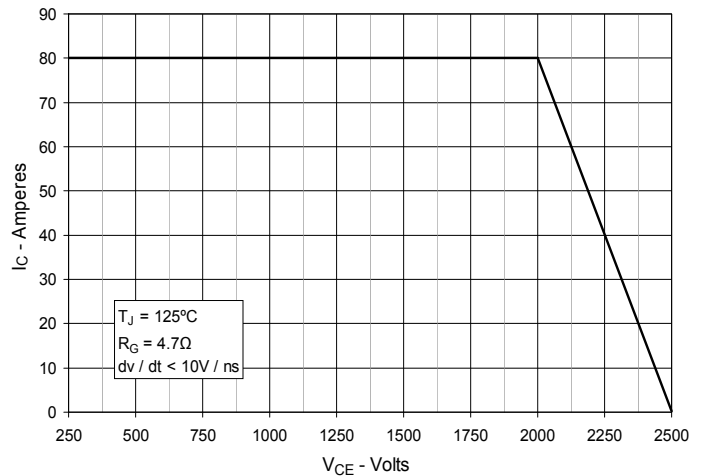
Fig. 7. Input Admittance

Fig. 8. Transconductance

Fig. 9. Forward Voltage Drop of Intrinsic Diode

Fig. 10. Gate Charge

Fig. 11. Capacitance

Fig. 12. Reverse-Bias Safe Operating Area


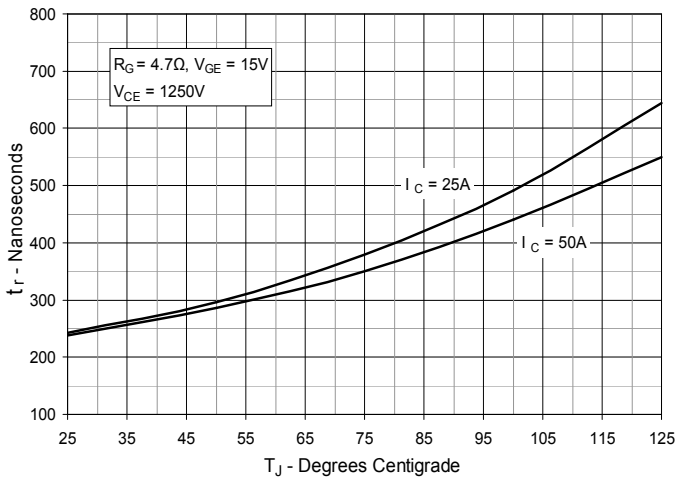
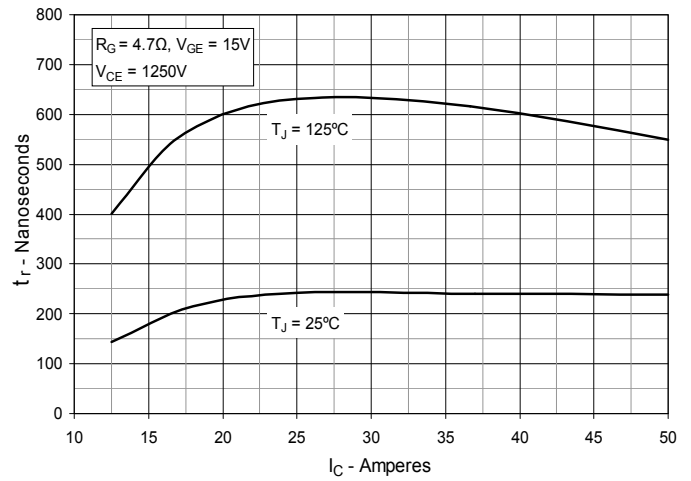
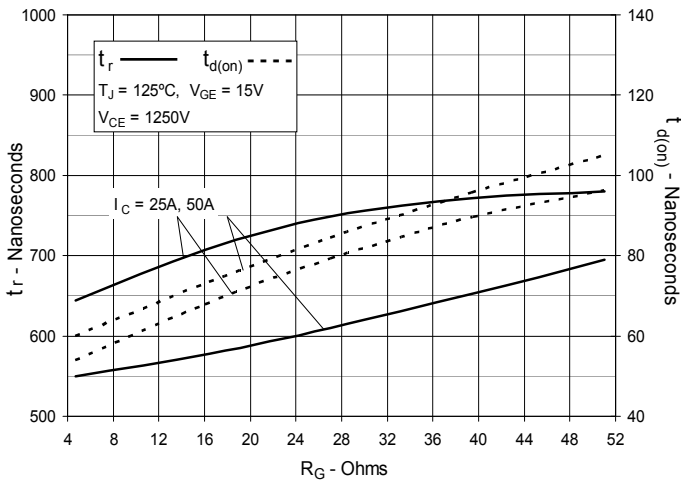
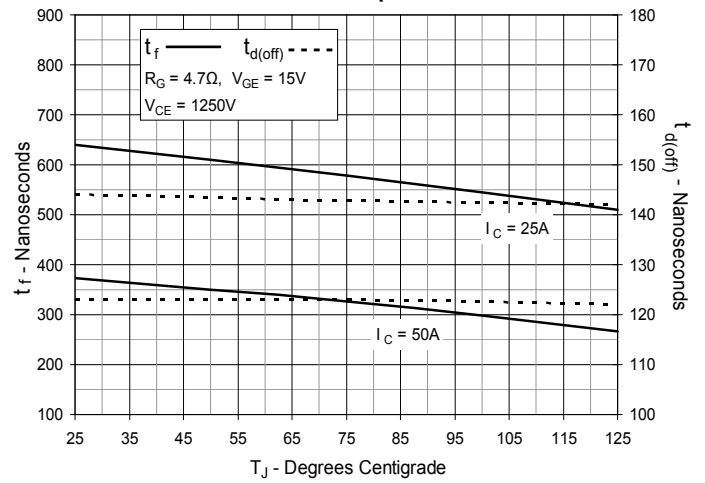
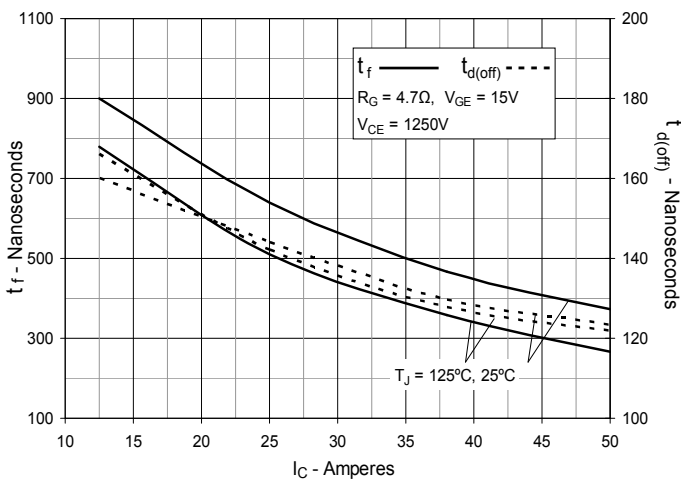
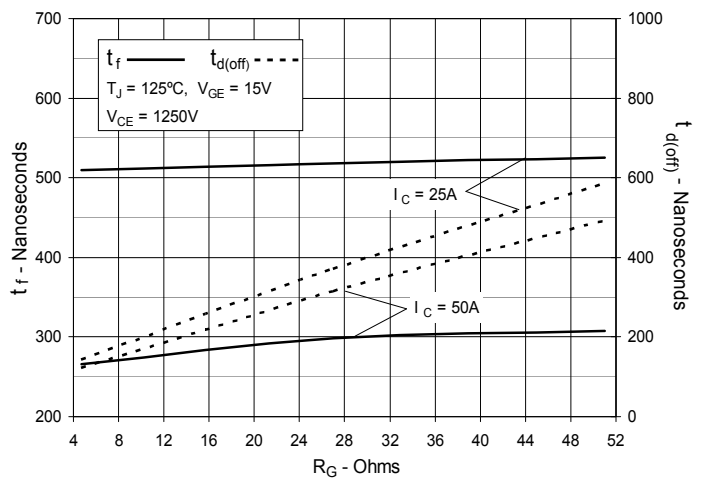
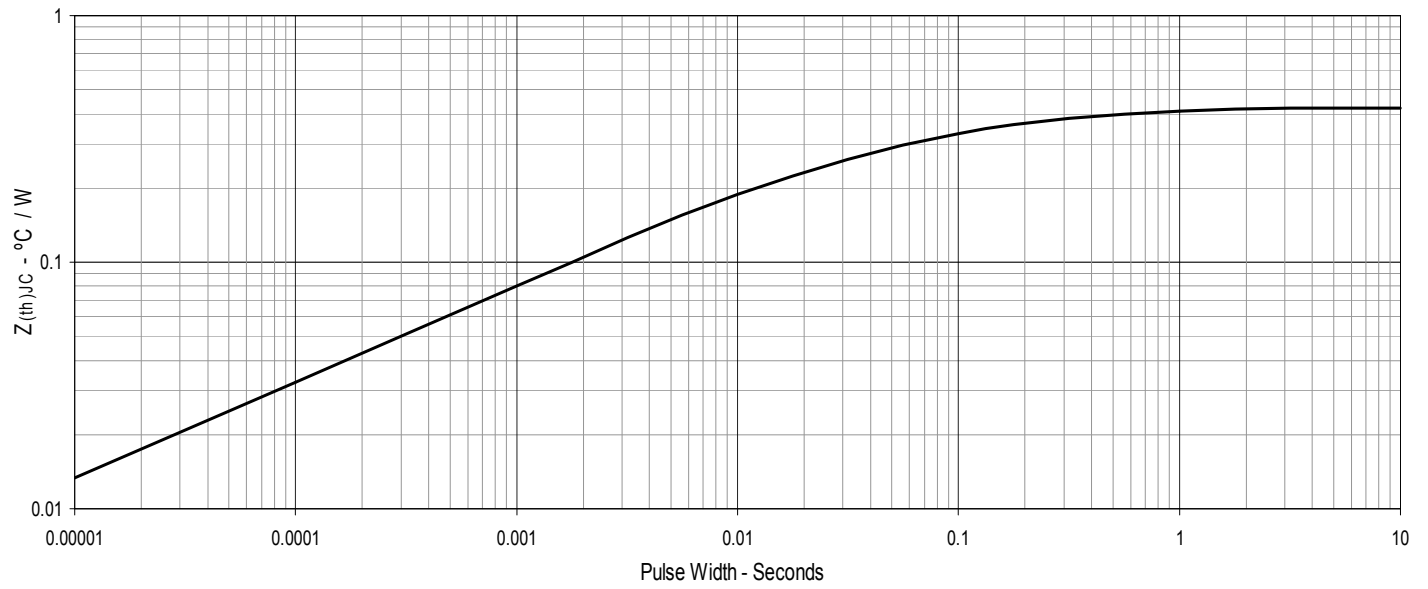
Fig. 13. Resistive Turn-on Rise Time vs. Junction Temperature

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


Fig. 19. Maximum Transient Thermal Impedance





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