

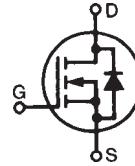
Trench Gate Power MOSFET

IXTQ88N28T

$$\begin{aligned} V_{DSS} &= 280V \\ I_{D25} &= 88A \\ R_{DS(on)} &\leq 44m\Omega \end{aligned}$$

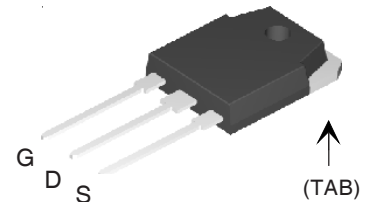
N-Channel Enhancement Mode

For Plasma Display Applications



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	280	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1\text{ M}\Omega$	280	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	88	A
I_{DRMS}	External lead current limit	75	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	250	A
P_D	$T_C = 25^\circ\text{C}$	625	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	Maximum lead temperature for soldering	300	$^\circ\text{C}$
T_{SOLD}	1.6mm (0.062 in.) from case for 10s	260	$^\circ\text{C}$
M_d	Mounting torque	1.13/10	Nm/lb.in.
Weight		5.5	g

TO-3P (IXTQ)



G = Gate
S = Source
D = Drain
TAB = Drain

Features

- Trench gate construction for low $R_{DS(on)}$
- International standard package
- Low package inductance
 - easy to drive and to protect

Advantages

- Easy to mount
- Space savings

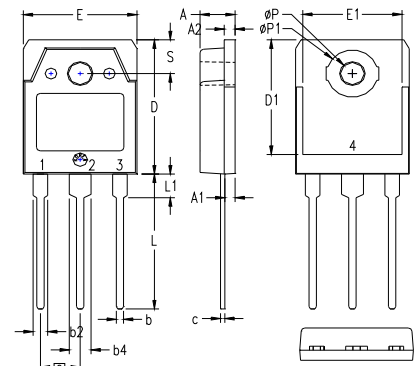
Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
V_{DSS}	$V_{GS} = 0\text{ V}$, $I_D = 1\text{ mA}$	280		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 1\text{ mA}$	3.0		5.0 V
I_{GSS}	$V_{GS} = \pm 20\text{ V}$, $V_{DS} = 0\text{ V}$			± 200 nA
I_{DSS}	$V_{DS} = V_{DSS}$			1 μA
	$V_{GS} = 0\text{ V}$ $T_J = 125^\circ\text{C}$			200 μA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 0.5 \cdot I_{D25}$, Note1	38	44	m Ω

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{ V}$, $I_D = 0.5 I_{D25}$, Note 1	40	66	S
C_{iss}	$V_{GS} = 0\text{ V}$, $V_{DS} = 25\text{ V}$, $f = 1\text{ MHz}$		5750	pF
C_{oss}			600	pF
C_{rss}			52	pF
$t_{d(on)}$	Resistive Switching Times $V_{GS} = 15\text{ V}$, $V_{DS} = 220\text{ V}$, $I_D = 44\text{ A}$ $R_G = 5\Omega$ (External)		38	ns
t_r			60	ns
$t_{d(off)}$			96	ns
t_f			57	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$		138	nC
Q_{gs}			48	nC
Q_{gd}			40	nC
R_{thJC}			0.25	0.20°C/W
R_{thCK}				$^\circ\text{C/W}$

Source-Drain Diode		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
Symbol	Test Conditions	Min.	typ.	Max.
I_S	$V_{GS} = 0\text{ V}$			88 A
I_{SM}	Repetitive, pulse width limited by T_{JM}			250 A
V_{SD}	$I_F = I_S$, $V_{GS} = 0\text{ V}$, Note 1			1.5 V
t_{rr}	$I_F = 25\text{ A}$ $-di/dt = 100\text{ A}/\mu\text{s}$		200	ns
Q_{RM}			2.0	μC

Notes: 1. Pulse test, $t \leq 300\mu\text{s}$; duty cycle, $d \leq 2\%$.

TO-3P (IXTQ) Outline



- 1 - GATE
2 - DRAIN (COLLECTOR)
3 - SOURCE (EMITTER)
4 - DRAIN (COLLECTOR)

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	.791	19.80	20.10
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

All metal area are tin plated.

Fig. 1. Output Characteristics
@ 25°C

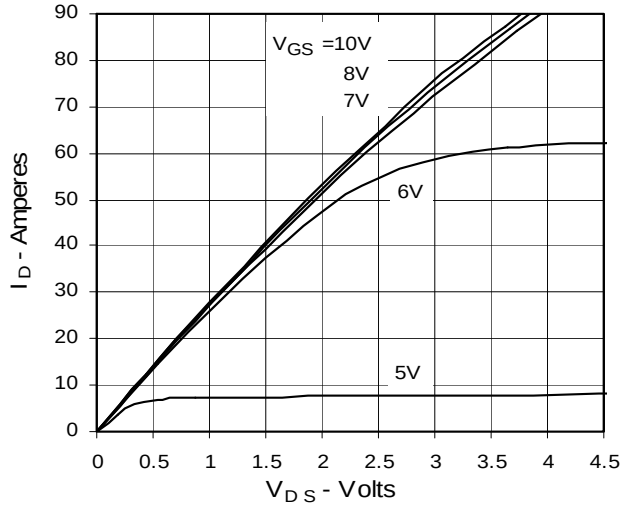


Fig. 2. Extended Output Characteristics
@ 25°C

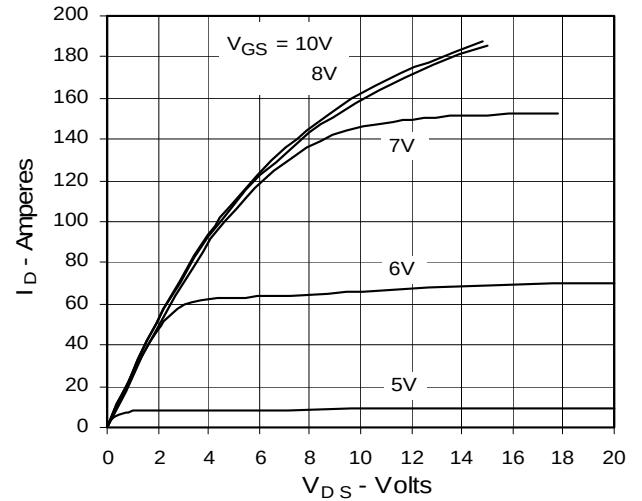


Fig. 3. Output Characteristics
@ 125°C

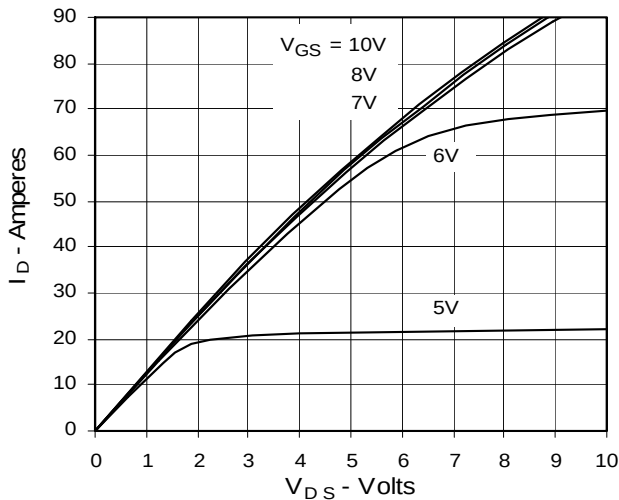


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

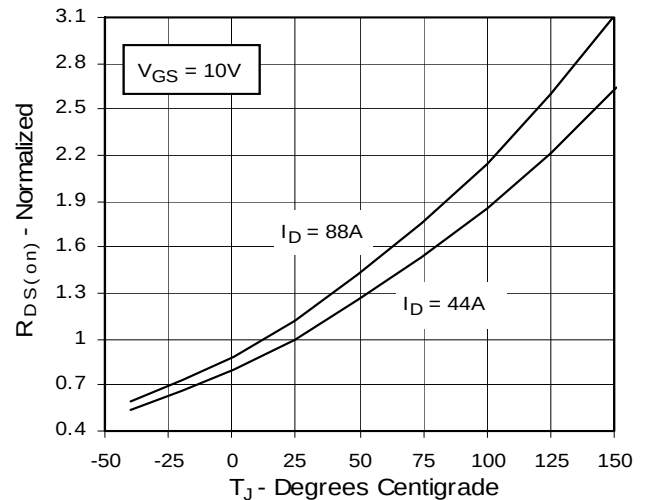


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

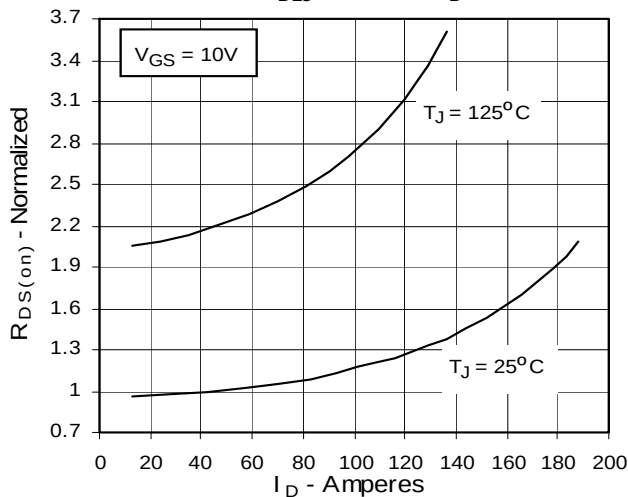


Fig. 6. Drain Current vs. Case Temperature

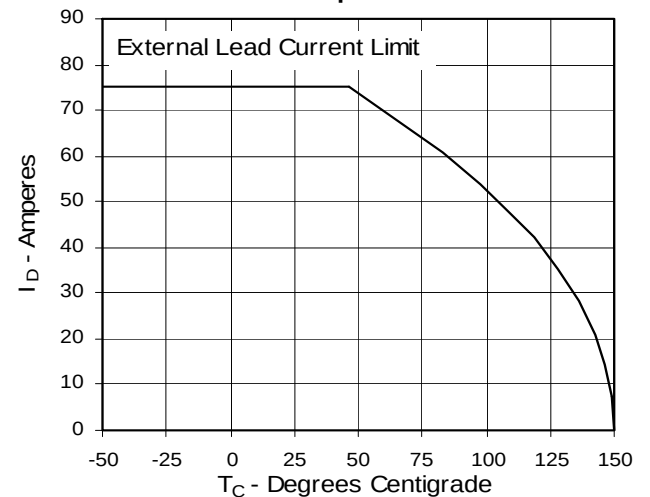


Fig. 7. Input Admittance

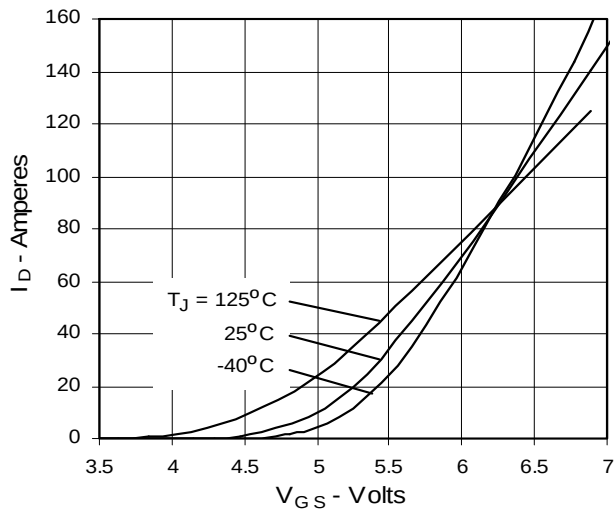


Fig. 8. Transconductance

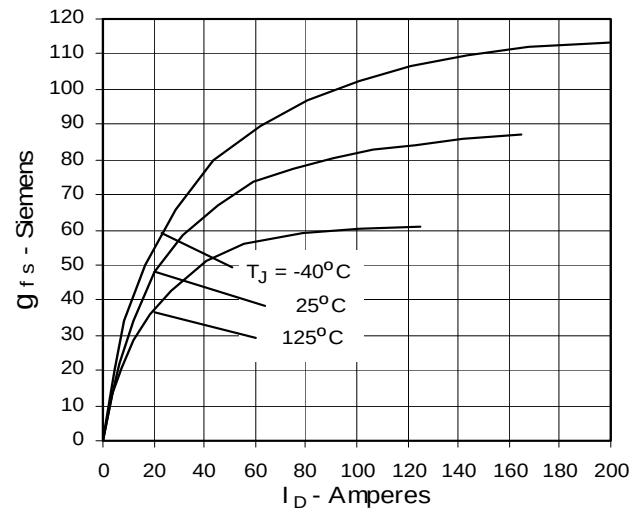


Fig. 9. Source Current vs. Source-To-Drain Voltage

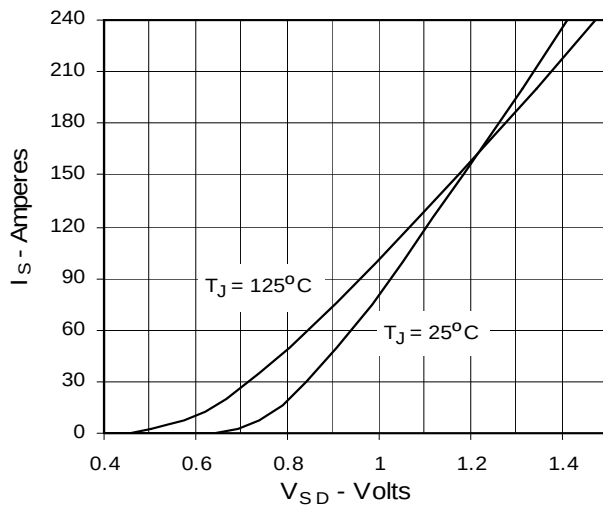


Fig. 10. Gate Charge

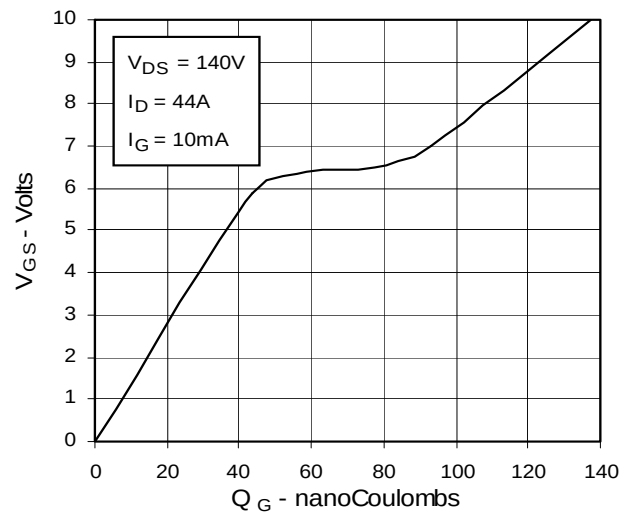


Fig. 11. Capacitance

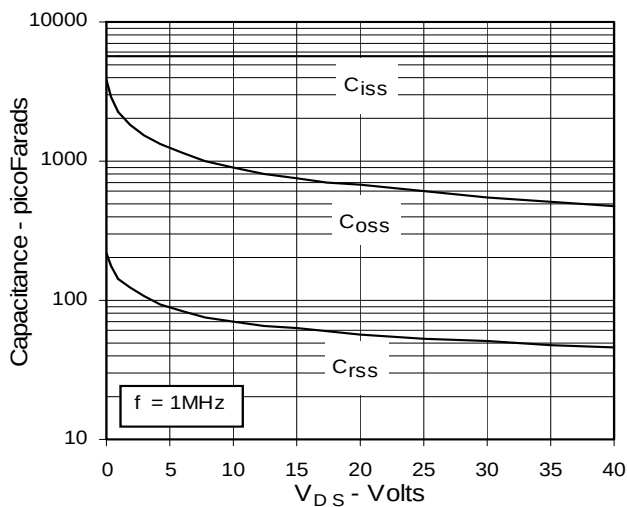


Fig. 12. Forward-Bias Safe Operating Area

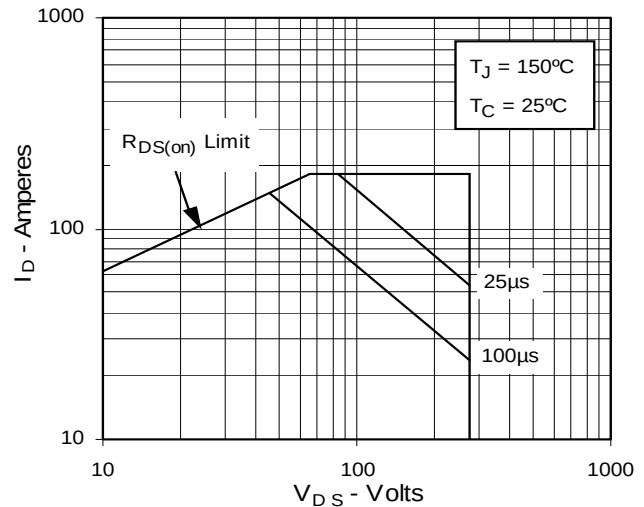


Fig. 13. Maximum Transient Thermal Impedance

