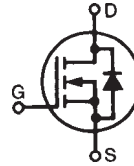


Trench Gate Power MOSFET

IXTQ 50N28T
IXTA 50N28T
IXTP 50N28T

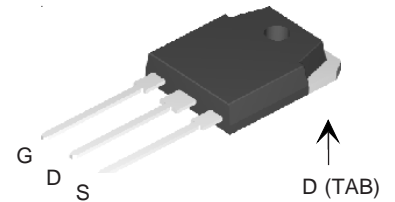
$$\begin{aligned} V_{DSS} &= 280 \text{ V} \\ I_{D25} &= 50 \text{ A} \\ R_{DS(on)} &< 60 \text{ m}\Omega \end{aligned}$$

N-Channel Enhancement Mode
For PDP drivers

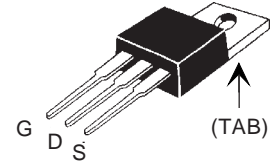


Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 175°C	280	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 175°C ; $R_{GS} = 1 \text{ M}\Omega$	280	V
V_{GSM}		± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	50	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	125	A
P_D	$T_C = 25^\circ\text{C}$	340	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s Maximum tab temperature for soldering TO-263 package for 10s	300 260	$^\circ\text{C}$ $^\circ\text{C}$
M_d	Mounting torque (TO-3P / TO-220)	1.13/10	Nm/lb.in.
Weight	TO-3P	5.5	g
	TO-220	4	g
	TO-263	3	g

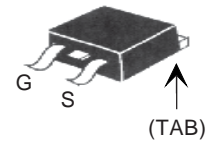
TO-3P (IXTQ)



TO-220 (IXTP)



TO-263 (IXTA)



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

Features

- International standard packages
- Low package inductance
 - easy to drive and to protect

Advantages

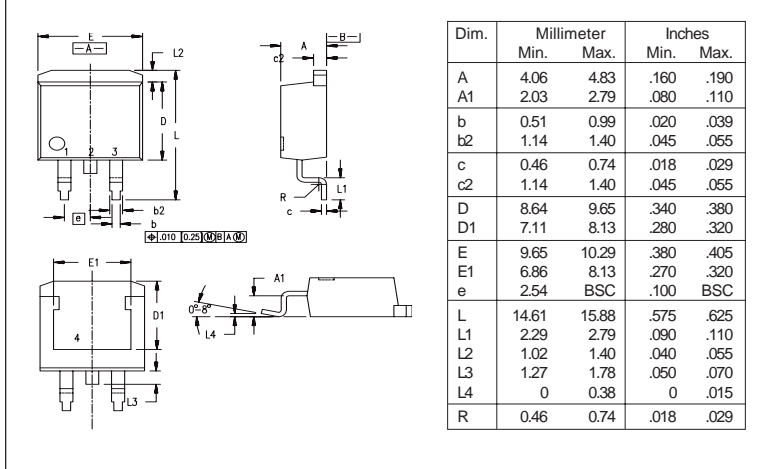
- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \mu\text{A}$	280		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu\text{A}$	2.5		4.5 V
I_{GSS}	$V_{GS} = \pm 20 V_{DC}$, $V_{DS} = 0$			$\pm 200 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$			1 μA
				200 μA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 25 \text{ A}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2\%$	50	60	$\text{m}\Omega$

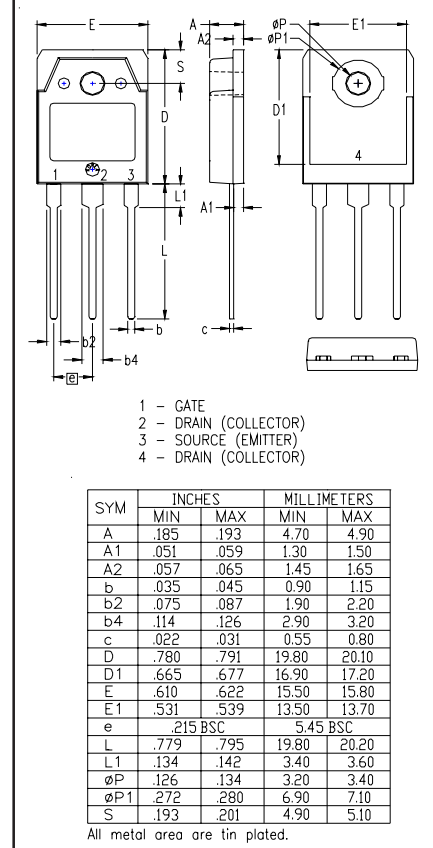
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 50\text{ A}$, pulse test	40	58	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		4070	pF
C_{oss}			405	pF
C_{rss}			24	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 140\text{ V}, I_D = 25\text{ A}$ $R_G = 5\ \Omega$ (External)		37	ns
t_r			31	ns
$t_{d(off)}$			68	ns
t_f			36	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 140\text{ V}, I_D = 25\text{ A}$		87	nC
Q_{gs}			32	nC
Q_{gd}			25	nC
R_{thJC}				0.37 K/W
R_{thCK}	(TO-3P) (TO-220)		0.21 0.25	K/W K/W

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		Min.	typ.	Max.
I_S	$V_{GS} = 0\text{ V}$			50 A
I_{SM}	Repetitive			120 A
V_{SD}	$I_F = 50\text{ A}, V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$			1.5 V
t_{rr}	$I_F = 25\text{ A}$ $-di/dt = 100\text{ A}/\mu\text{s}$		180	ns
Q_{RM}	$V_R = 25\text{ V}$		1.3	μC

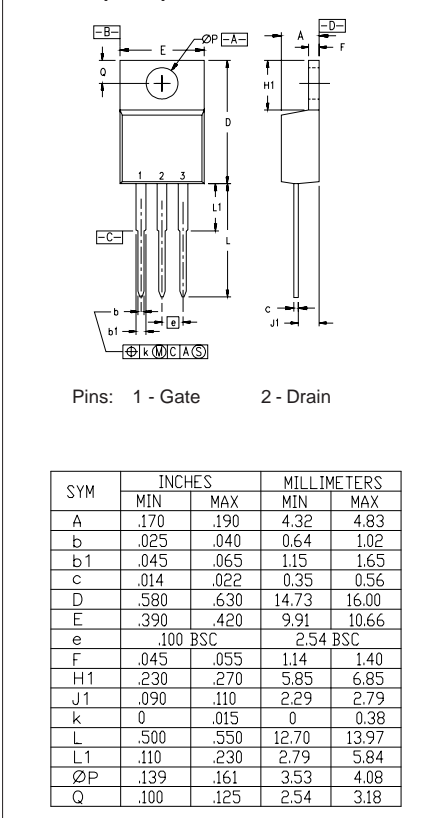
TO-263 (IXTA) Outline



TO-3P (IXTQ) Outline



TO-220 (IXTP) Outline



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
	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
	4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	

Fig. 1. Output Characteristics @ 25°C

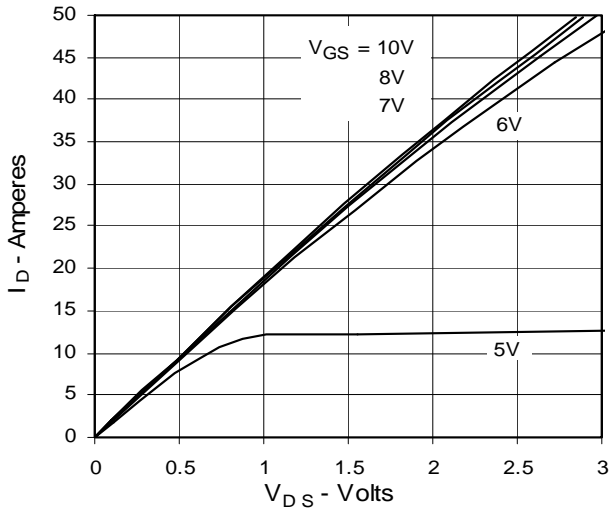


Fig. 2. Extended Output Characteristics @ 25°C

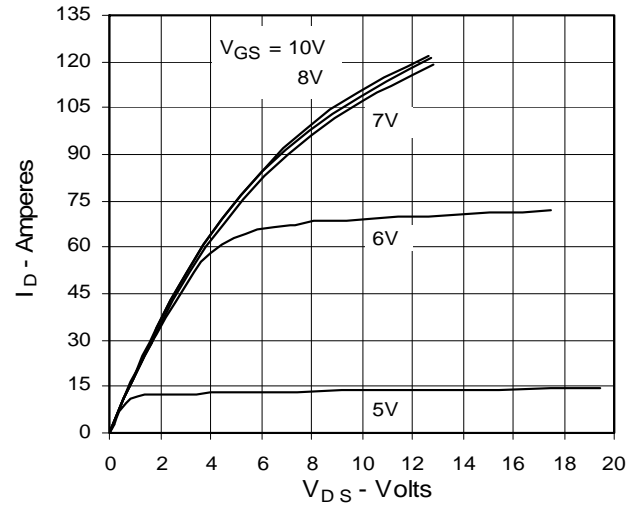


Fig. 3. Output Characteristics @ 125°C

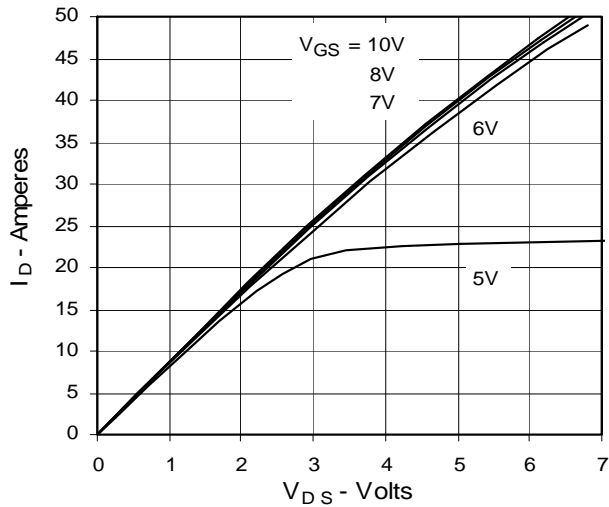


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

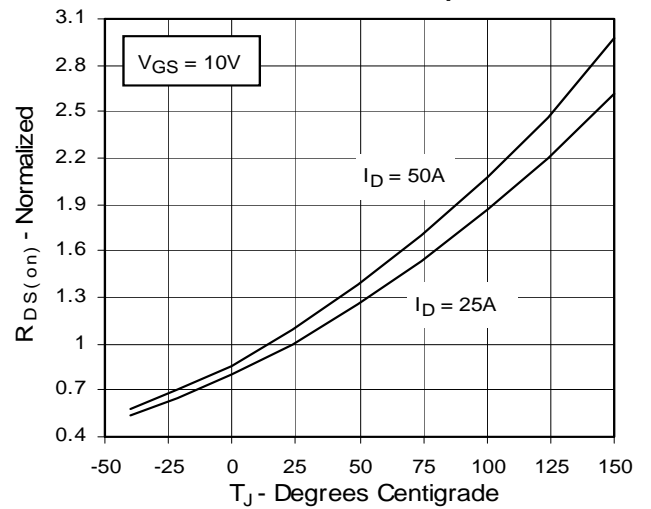


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

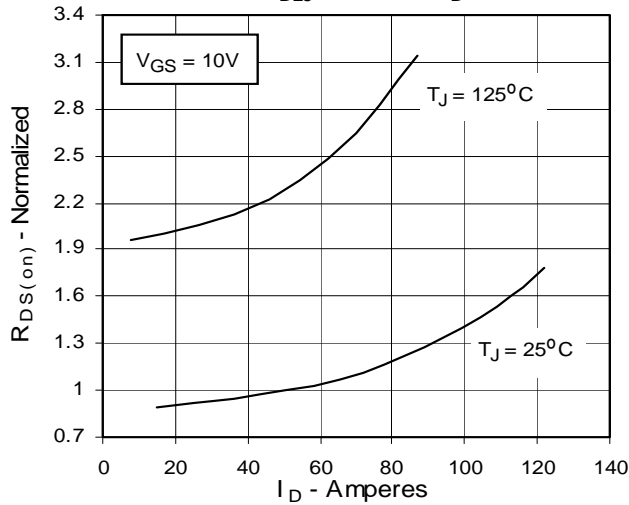


Fig. 6. Drain Current vs. Case Temperature

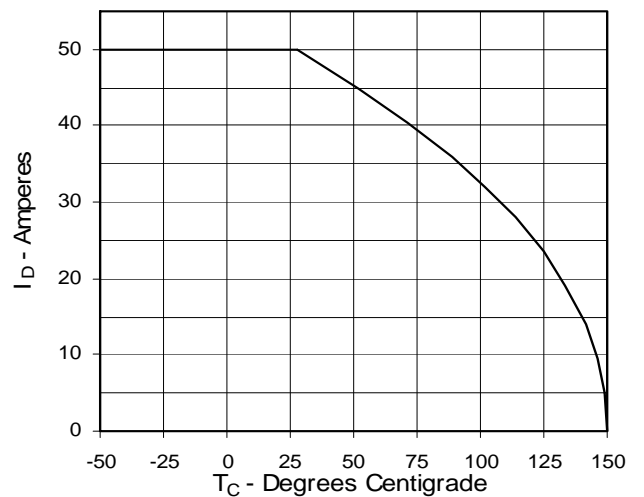


Fig. 7. Input Admittance

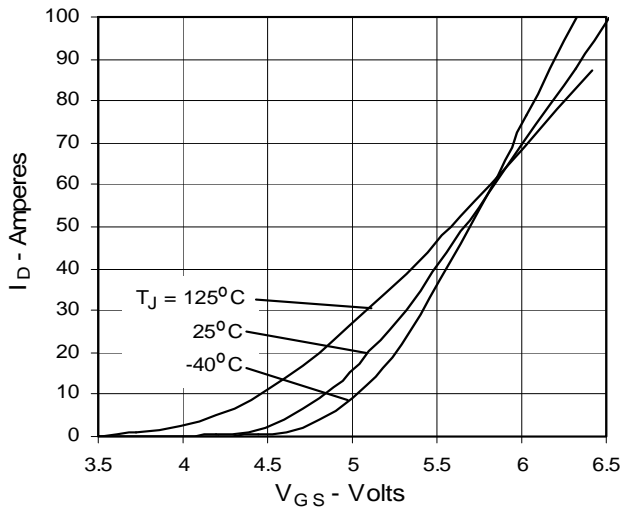


Fig. 8. Transconductance

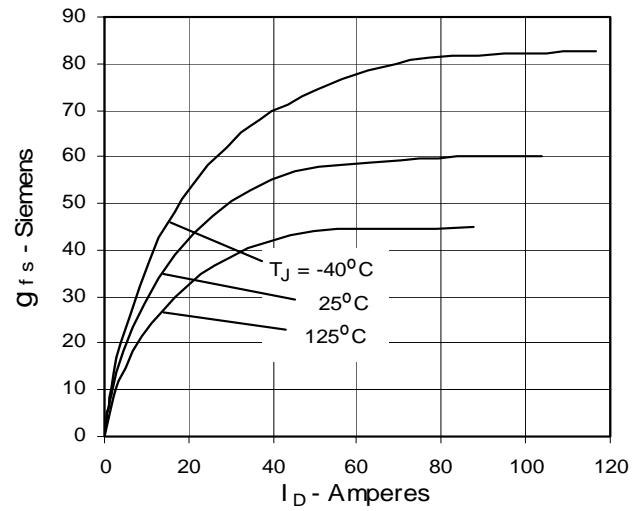


Fig. 9. Source Current vs. Source-To-Drain Voltage

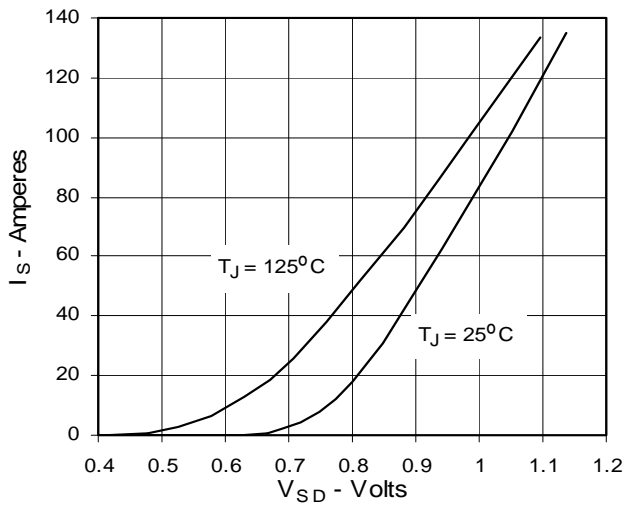


Fig. 10. Gate Charge

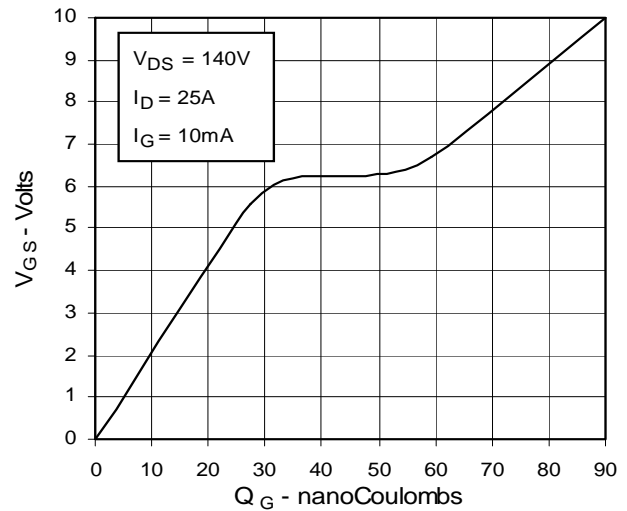


Fig. 11. Capacitance

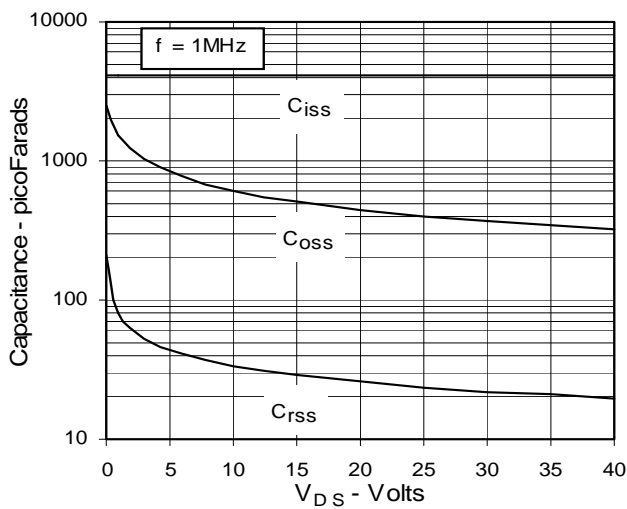


Fig. 12. Forward-Bias Safe Operating Area

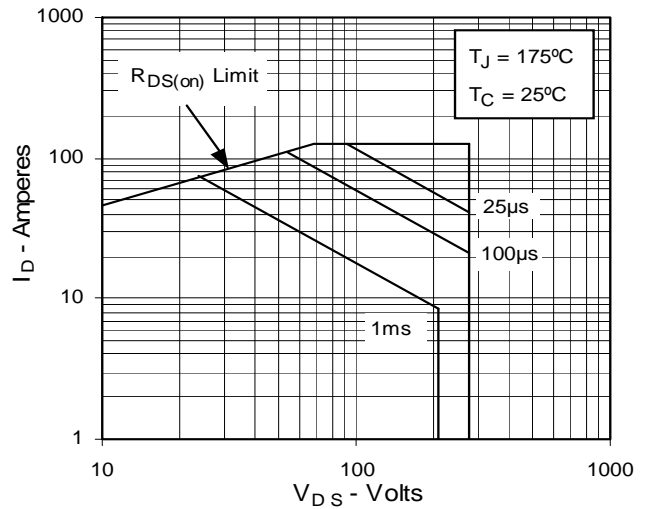


Fig. 13. Maximum Transient Thermal Resistance

