

DESCRIPTION

The MXT01N08TAL uses advanced trench technology to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

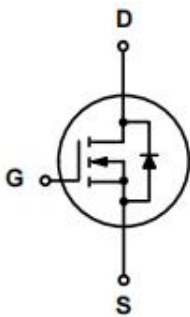
GENERAL FEATURES

- $V_{DS}=85V$, $I_D=300A$
 $R_{DS(ON)}(Typ.)=1.2m\Omega$ @ $V_{GS}=10V$
- Advanced trench cell design
- Super-mounted package
- Super Trench
- MSL1

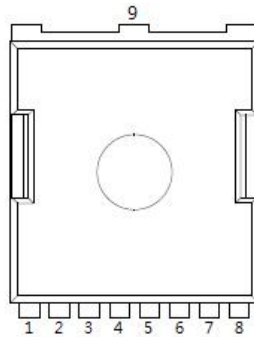
APPLICATION

- BMS
- High power inverter system
- Drones
- Light electric vehicles

PINOUT



Schematic diagram



TOLL-8L top view

Pin	Description
1	Gate(G)
2,3,4,5,6,7,8	Source(S)
9	Drain(D)

ORDERING INFORMATION

Part Number	Storage Temperature	Package	Devices Per Reel
MXT01N08TAL	-55°C to 150°C	TOLL-8L	2000

ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	85	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current ($V_{GS}=10V$)	I_D	300	A
Drain Current ($T_C=100^\circ C$, $V_{GS}=10V$)	I_D	267	A
Pulsed Drain Current ($V_{GS}=10V$) ^(Note1)	I_{DM}	1200	A
Diode Forward Current	I_S	300	A
Drain Power Dissipation	P_{tot}	500	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 175	$^\circ C$
Single Pulsed Avalanche Energy	E_{AS}	2800	mJ
Thermal Resistance, Junction-to-Ambient ^(Note2)	$R_{\theta JA}$	32.8	$^\circ C/W$
Thermal Resistance, Junction-to-Case ^(Note2)	$R_{\theta JC}$	0.45	$^\circ C/W$

Note 1. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

Note 2. Surface Mounted on minimum footprint pad area

Note 3. Limited by bonding wire



N-Channel Enhancement Mode Power MOSFET **MXT01N08TA**



ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	85	95	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
On-State Resistance ^(Note1)	$R_{DS(ON)}$	$V_{GS}=10V, I_{DS}=30A$	-	1.2	1.4	m Ω
Dynamic Characteristics^(Note2)						
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V,$ $F=1.0MHz$	-	14490	-	pF
Output Capacitance	C_{oss}		-	2350	-	pF
Reverse Transfer Capacitance	C_{rss}		-	472	-	pF
Switching Characteristics^(Note2)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=50V, I_{DS}=50A,$ $V_{GEN}=10V,$ $R_G=4.5\Omega, R_L=1\Omega,$	-	39	-	nS
Turn-on Rise Time	t_r		-	122	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	115	-	nS
Turn-Off Fall Time	t_f		-	137	-	nS
Total Gate Charge	Q_g	$V_{DS}=50V, I_{DS}=50A,$ $V_{GS}=10V$	-	240	-	nC
Gate-Source Charge	Q_{gs}		-	56	-	nC
Gate-Drain Charge	Q_{gd}		-	60	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^(Note1)	V_{SD}	$V_{GS}=0V, I_{SD}=50A$	-	-	1.2	V
Reverse Recovery Time	t_{rr}	$I_{DS}=50A, V_{GS}=0V$	-	120	-	nS
Reverse Recovery Charge	Q_{rr}	$di_{SD}/dt=100A/\mu s$	-	360	-	nC

Note 1. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

Note 2. Guaranteed by design, not subject to production testing



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 1. Power Capability

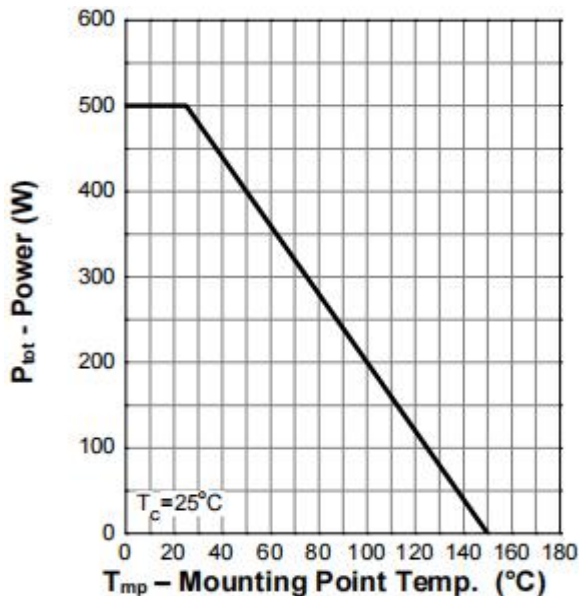


Figure 2. Current Capability

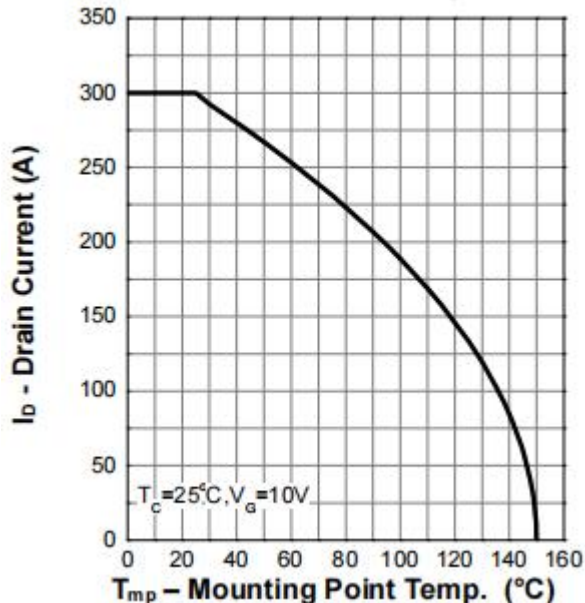


Figure 3. Safe Operating Area

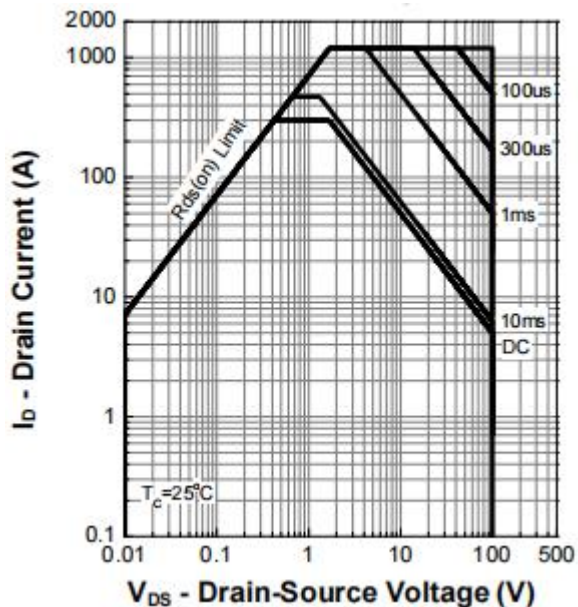
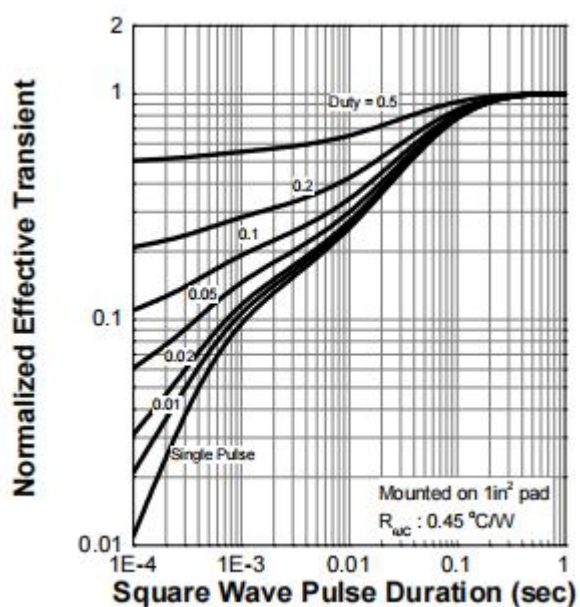


Figure 4. Transient Thermal Impedance





TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 5. Output Characteristics

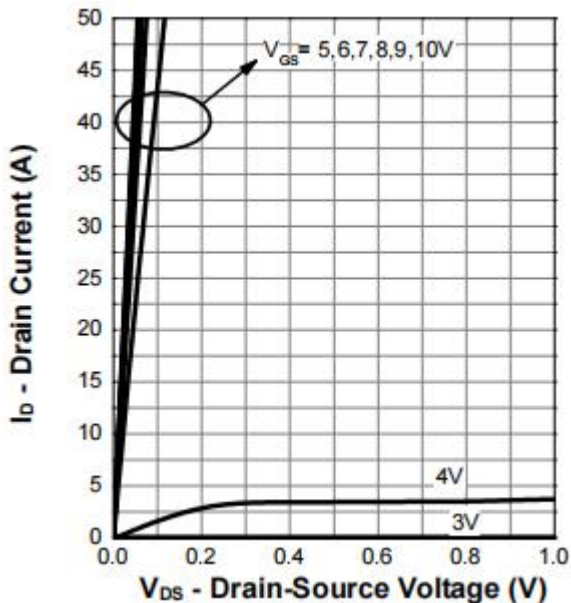


Figure 6. On Resistance

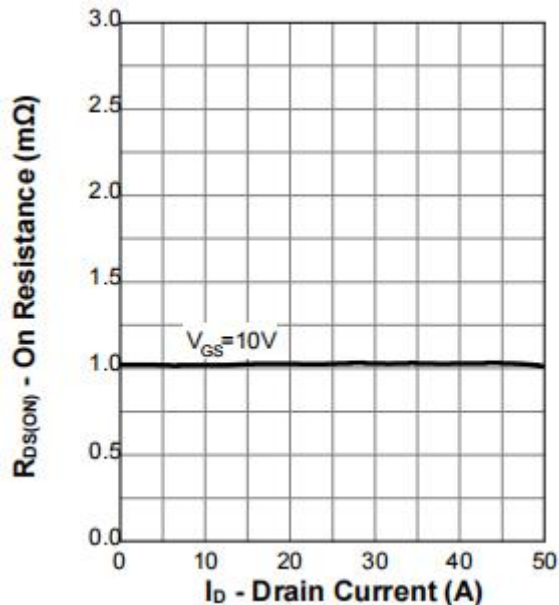


Figure 7. Transfer Characteristics

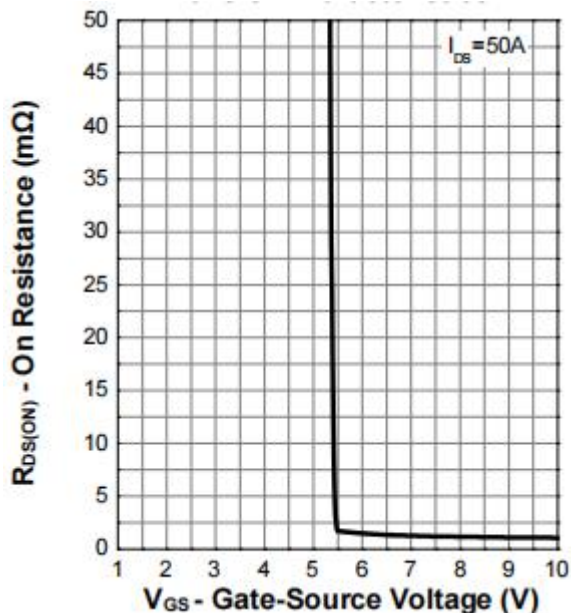
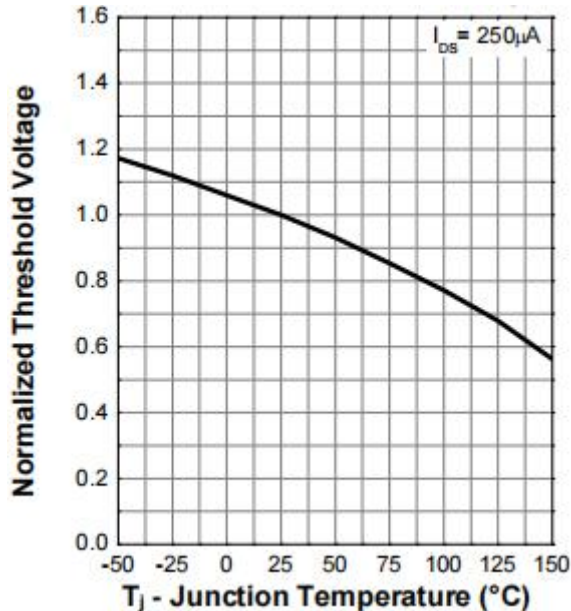


Figure 8. Normalized Threshold Voltage





TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 9. Normalized On Resistance

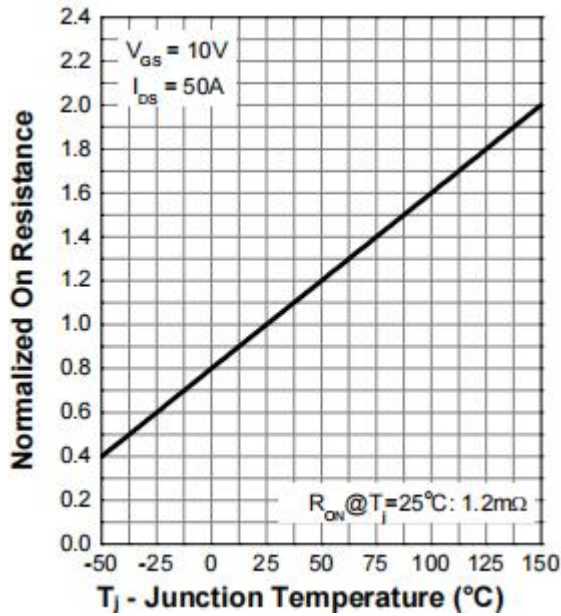


Figure 10. Diode Forward Current

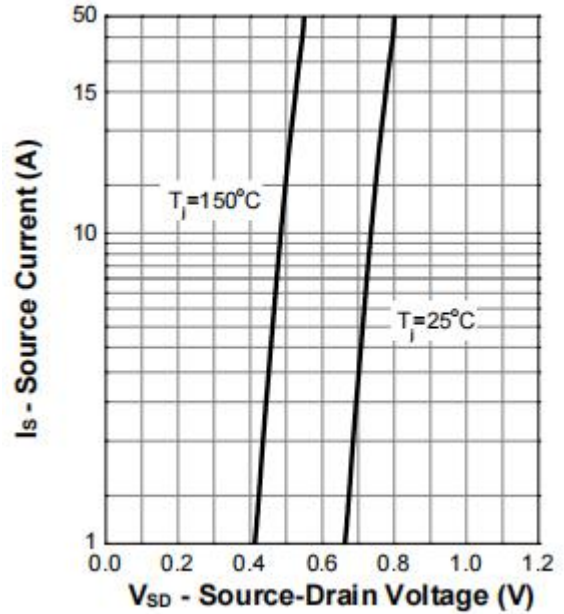


Figure 11. Capacitance

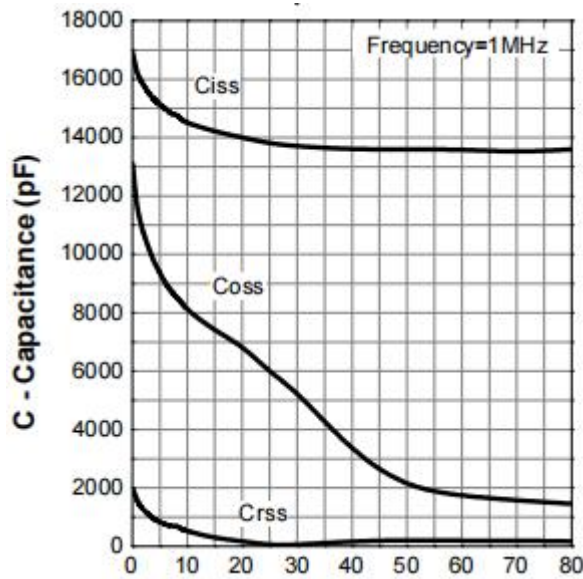
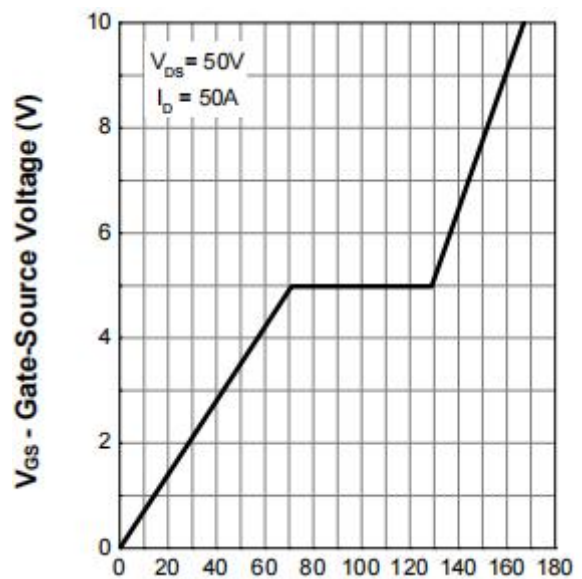
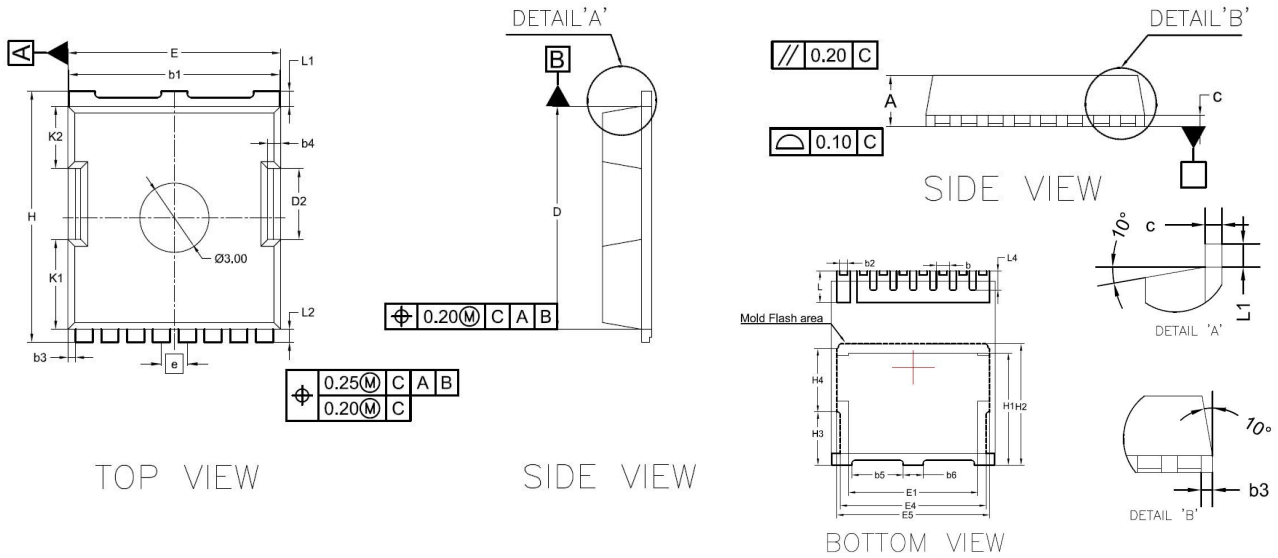


Figure 12. Gate Charge



PACKAGE INFORMATION

TOLL-8L



Symbol	Dimensions In Millimeters			Dimensions In INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	2.200	2.300	2.400	0.087	0.091	0.094
c	0.492	0.500	0.508	0.019	0.020	0.021
D	10.280	10.380	10.480	0.405	0.409	0.413
E	9.800	9.900	10.000	0.386	0.390	0.394
e	1.20 BSC			0.047 BSC		
H	11.580	11.680	11.780	0.456	0.460	0.464
H1	6.650	6.750	6.850	0.262	0.266	0.270
H2		7.300			0.287	
H3		3.200			0.126	
H4		3.800			0.150	
K1		4.180			0.165	
K2		2.900			0.114	
D2		3.300			0.130	
b	0.700	0.800	0.900	0.028	0.031	0.035
b1	9.700	9.800	9.900	0.382	0.386	0.390
b2	0.420	0.460	0.500	0.017	0.018	0.020
b3		0.350			0.014	
b4		0.600			0.024	
b5		3.100			0.122	
b6		1.200			0.047	
L	1.700	1.900	2.100	0.067	0.075	0.083
L1		0.700			0.028	
L2		0.600			0.024	
L4	1.050	1.150	1.250	0.041	0.045	0.049
L5	0.500	0.600	0.700	0.020	0.024	0.028
E1		7.800			0.310	
E4		8.800			0.350	
E5		9.200			0.360	