

# TLTS1008TE

## N-Channel Enhancement Mode Power MOSFET

### ● Features

$$V_{DS} = 100V,$$

$$I_D = 64.5A,$$

$$R_{DS(ON)} @V_{GS} = 10V, \text{ TYP } 8.4 \text{ m}\Omega$$

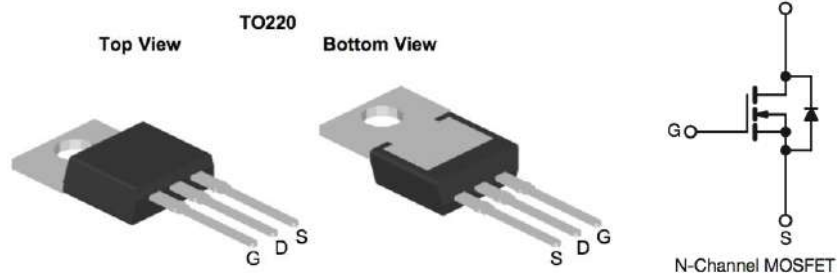
$$R_{DS(ON)} @V_{GS} = 6.0V, \text{ TYP } 9.7 \text{ m}\Omega$$

$$R_{DS(ON)} @V_{GS} = 4.5V, \text{ TYP } 11.6 \text{ m}\Omega$$

### ● General Description

- Load switch
- Battery protection applications
- High Frequency Switching
- Synchronous Rectification

### ● Pin Configurations



### ● Absolute Maximum Ratings @ $T_A=25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DSS}$	100	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current (Continuous) *AC	$I_D$	$T_C=25^\circ\text{C}$	64.5
		$T_C=100^\circ\text{C}$	40.8
Drain Current (Pulse) *B	$I_{DM}$	180	A
Power Dissipation	$P_D$	89	W
Operating Temperature/ Storage Temperature	$T_J/T_{STG}$	-55~150	$^\circ\text{C}$

### ● Thermal Resistance Ratings

Parameter	Symbol	Maximum	Unit
Maximum Junction-to-Ambient	$R_{thJA}$	15	$^\circ\text{C/W}$
Maximum Junction-to-Case (Drain)	$R_{thJC}$	1.4	

## TLTS1008TE

● **Electrical Characteristics** @ $T_A=25^\circ\text{C}$  unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 100V, V_{GS} = 0V$	--	--	1	$\mu A$
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_{DS} = 250\mu A$	1	2	3	V
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$	--	--	$\pm 100$	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	--	8.4	11	m $\Omega$
	$R_{DS(on)}$	$V_{GS} = 6V, I_D = 20A$	--	9.7	13	m $\Omega$
	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 20A$	--	11.6	15	m $\Omega$
Diode Forward Voltage	$V_{SD}$	$I_{SD} = 1A, V_{GS} = 0V$	--	0.71	1.2	V
Diode Forward Current *AC	$I_S$	$T_C = 25^\circ\text{C}$	--	--	64.5	A
<b>Switching</b>						
Total Gate Charge	$Q_g$	$V_{GS} = 10V, V_{DS} = 50V, I_D = 20A$	--	40	--	nC
Gate-Source Charge	$Q_{gs}$		--	11	--	nC
Gate-Drain Charge	$Q_{gd}$		--	5	--	nC
Turn-on Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 50V, R_L = 2.5\Omega, R_{GEN} = 3\Omega$	--	13	--	ns
Turn-on Rise Time	$t_r$		--	9	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	30	--	ns
Turn-Off Fall Time	$t_f$		--	5	--	ns
<b>Dynamic</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 50V, V_{GS} = 0V, f = 1.0\text{MHz}$	--	2200	--	pF
Output Capacitance	$C_{oss}$		--	240	--	pF
Reverse Transfer Capacitance	$C_{rss}$		--	15	--	pF

A: The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ\text{C}$ . The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the  $t \leq 10s$  junction to ambient thermal resistance rating.

# TLTS1008TE

- Typical Performance Characteristics (T<sub>J</sub> = 25 °C, unless otherwise noted)

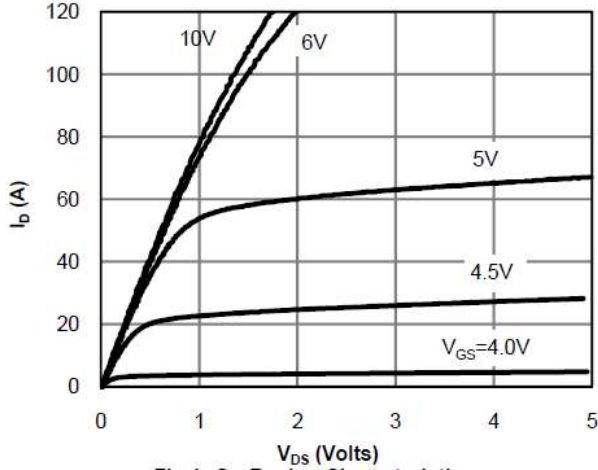


Fig 1: On-Region Characteristics

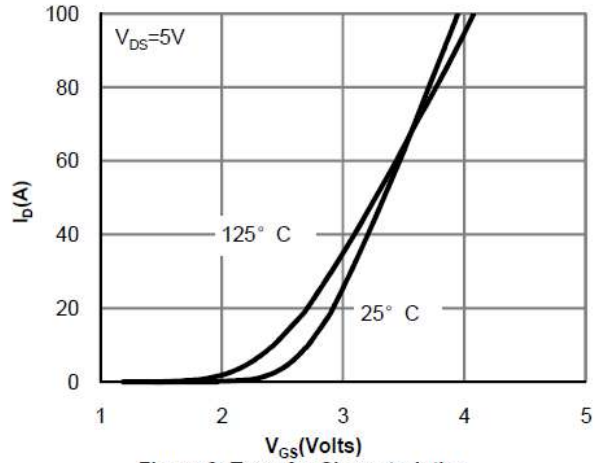


Figure 2: Transfer Characteristics

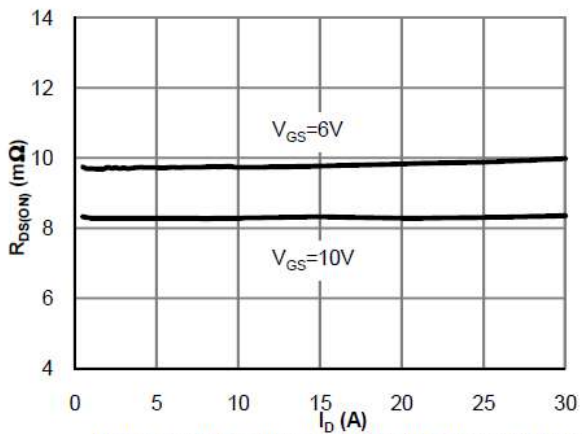


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

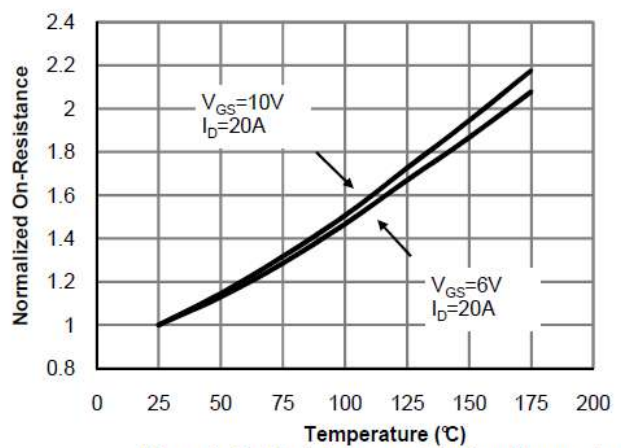


Figure 4: On-Resistance vs. Junction Temperature

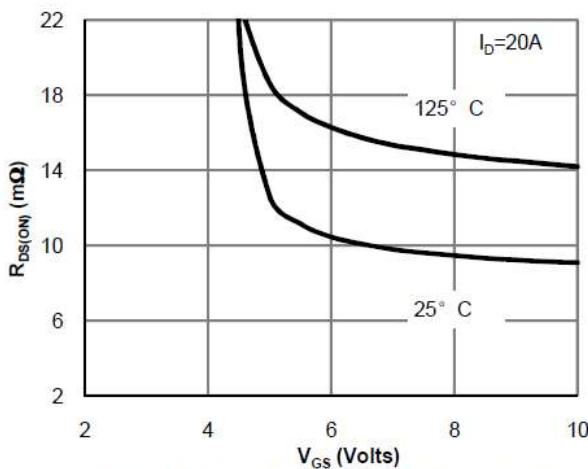


Figure 5: On-Resistance vs. Gate-Source Voltage

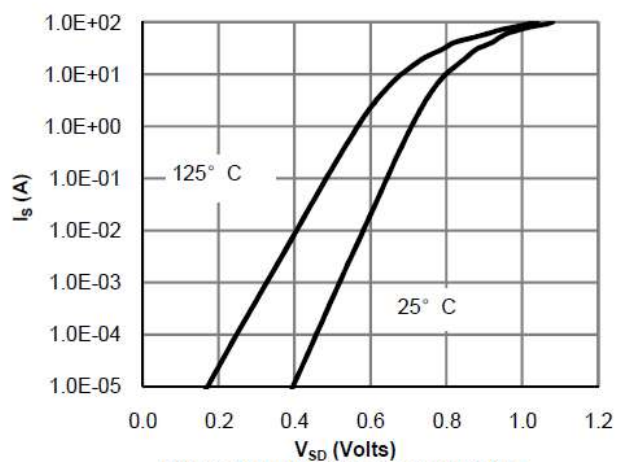


Figure 6: Body-Diode Characteristics

# TLTS1008TE

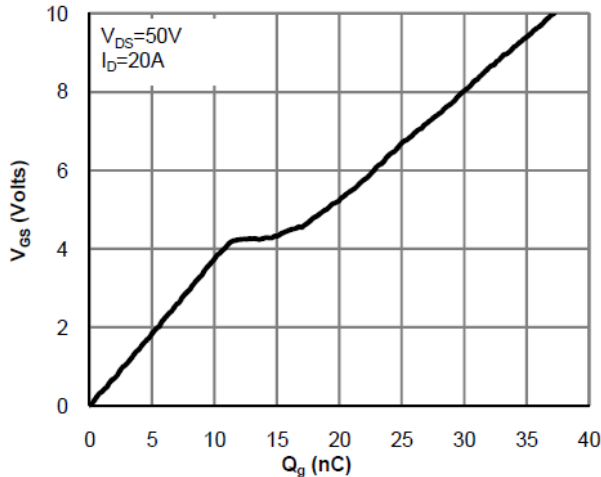


Figure 7: Gate-Charge Characteristics

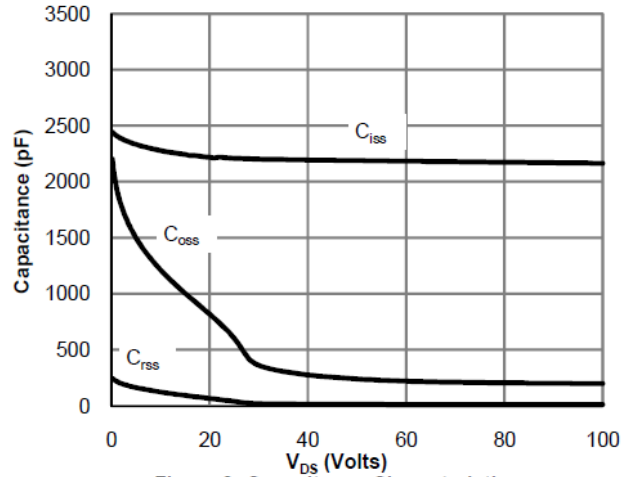


Figure 8: Capacitance Characteristics

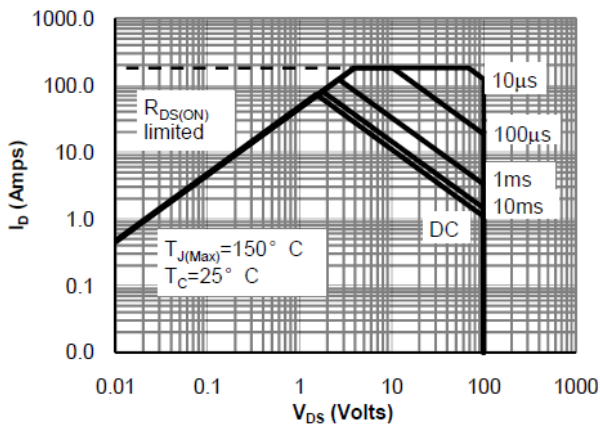


Figure 9: Maximum Forward Biased Safe Operating Area

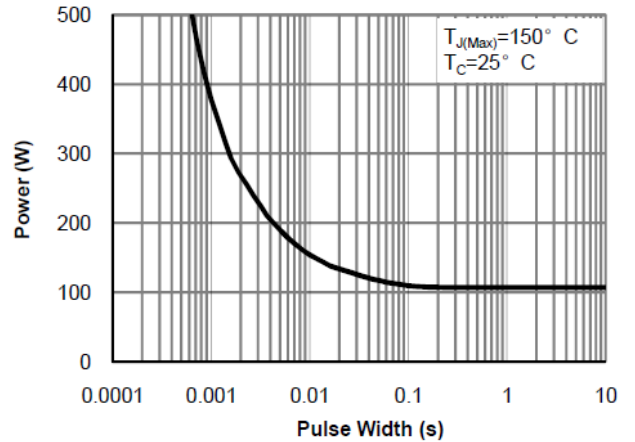


Figure 10: Single Pulse Power Rating Junction-to-Case

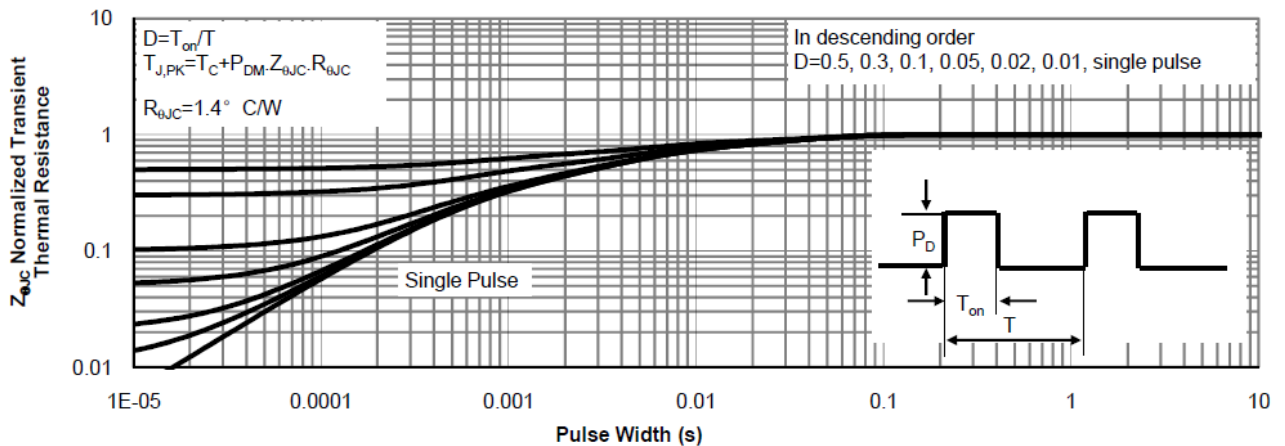
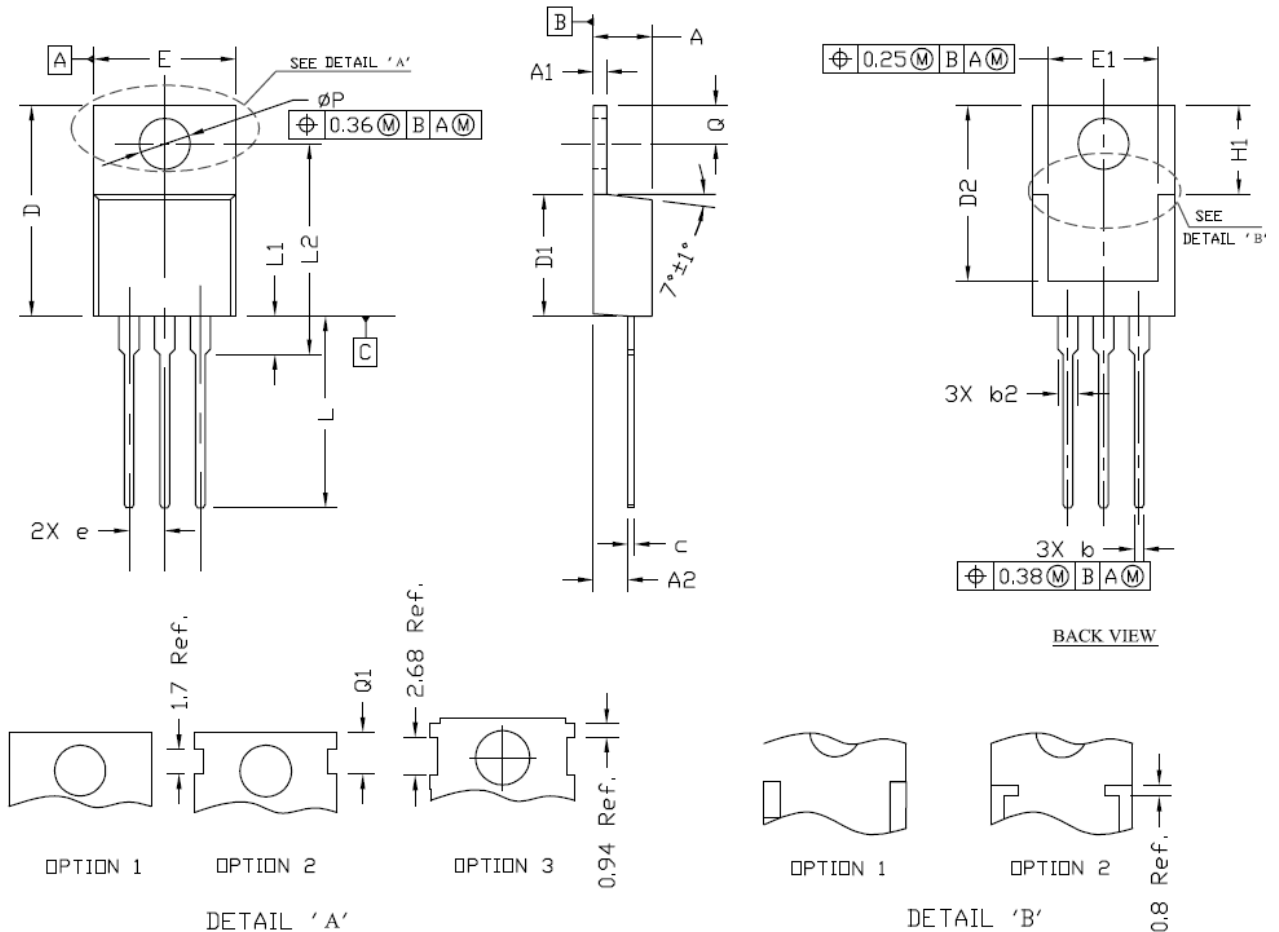


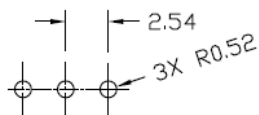
Figure 11: Normalized Maximum Transient Thermal Impedance

# TLTS1008TE

## ● Package Information



### RECOMMENDATION OF HOLE PATTERN



UNIT: mm

#### NOTE

1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS. MOLD FLASH SHOULD BE LESS THAN 6 MIL.
2. TOLERANCE 0.100 MILLIMETERS UNLESS OTHERWISE SPECIFIED.
3. CONTROLLING DIMENSION IS MILLIMETER. CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.45	4.72	0.169	0.175	0.186
A1	1.15	1.27	1.40	0.045	0.050	0.055
A2	2.20	2.67	2.90	0.087	0.105	0.114
b	0.69	0.81	0.95	0.027	0.032	0.037
b2	1.17	1.37	1.45	0.046	0.050	0.068
c	0.45	0.5	0.60	0.014	0.015	0.024
D	14.50	15.44	15.80	0.571	0.608	0.622
D1	8.59	9.14	9.65	0.338	0.360	0.380
D2	11.43	11.73	12.48	0.450	0.462	0.491
e	2.54 BSC			0.100 BSC.		
E	9.66	10.03	10.54	0.380	0.395	0.415
E1	6.22	---	---	0.245	---	---
H1	6.10	6.30	6.50	0.240	0.248	0.256
L	12.27	12.82	14.27	0.483	0.505	0.562
L1	2.47	---	3.90	0.097	---	0.154
L2	---	---	16.70	---	---	0.657
Q	2.59	2.74	2.89	0.102	0.108	0.114
ØP	3.50	3.84	3.89	0.138	0.151	0.153
Q1	2.70	---	2.90	0.106	---	0.114