

## Features

- Split Gate Trench MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low  $R_{DS(on)}$
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

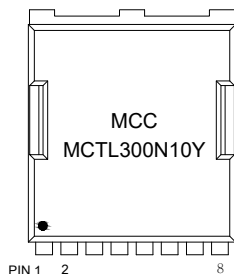
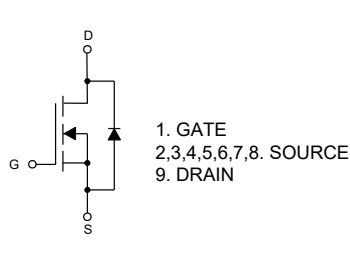
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 40°C/W Junction to Ambient <sup>(1)</sup>
- Thermal Resistance: 0.25°C/W Junction to Case <sup>(1)</sup>

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	300
		$T_C=100^\circ\text{C}$	267
Pulsed Drain Current <sup>(2)</sup>	$I_{DM}$	1200	A
Total Power Dissipation	$P_D$	500	W
Single Pulsed Avalanche Energy <sup>(3)</sup>	$E_{AS}$	800	mJ

Note:

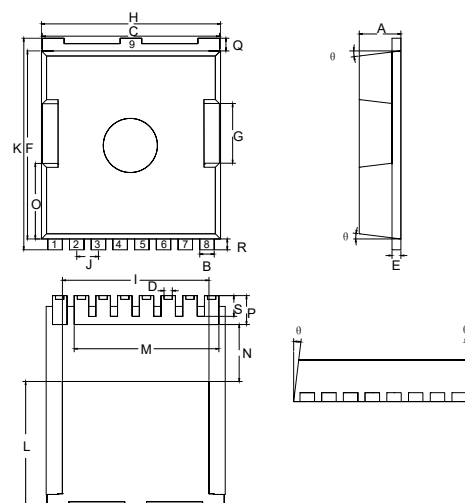
- 1.Surface Mounted on Minimum Footprint Pad Area.
- 2.Pulse Test: Pulse Width ≤ 10μs, Duty Cycle ≤ 1%.
3. $T_J=25^\circ\text{C}$ , L=1.0mH,  $V_{DD}=50\text{V}$ .

## Internal Structure and Marking Code



# N-CHANNEL MOSFET

## TOLL-8L



### DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.028	0.035	0.70	0.90	
C	0.382	0.390	9.70	9.90	
D	0.017	0.020	0.42	0.50	
E	0.016	0.024	0.40	0.60	
F	0.405	0.417	10.28	10.58	
G	0.122	0.138	3.10	3.50	
H	0.382	0.398	9.70	10.10	
I	0.311	0.327	7.90	8.30	
J	0.047		1.20		BSC
K	0.452	0.468	11.48	11.88	
L	0.266	0.281	6.75	7.15	
M	0.315		8.00		
N	0.118	0.130	3.00	3.30	
O	0.157	0.172	3.98	4.38	
P	0.055	0.071	1.40	1.80	
Q	0.024	0.031	0.60	0.80	
R	0.020	0.028	0.50	0.70	
S	0.039	0.051	1.00	1.30	
θ	4°	10°	4°	10°	

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2		4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$		1.2	1.45	m $\Omega$
		$V_{GS}=6V, I_D=15A$		1.48	1.9	m $\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				300	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=30A$			1.3	V
Reverse Recovery Time	$t_{rr}$	$I_S=30A, di/dt=100A/\mu s$		124		ns
Reverse Recovery Charge	$Q_{rr}$			388		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		13258		pF
Output Capacitance	$C_{oss}$			2058		
Reverse Transfer Capacitance	$C_{rss}$			111		
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=30A$		240		nC
Gate-Source Charge	$Q_{gs}$			60		
Gate-Drain Charge	$Q_{gd}$			59		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=50V, V_{GEN}=10V, R_G=4.5\Omega, R_L=1.66\Omega, I_{DS}=30A$		33		ns
Turn-On Rise Time	$t_r$			69		
Turn-Off Delay Time	$t_{d(off)}$			172		
Turn-Off Fall Time	$t_f$			105		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

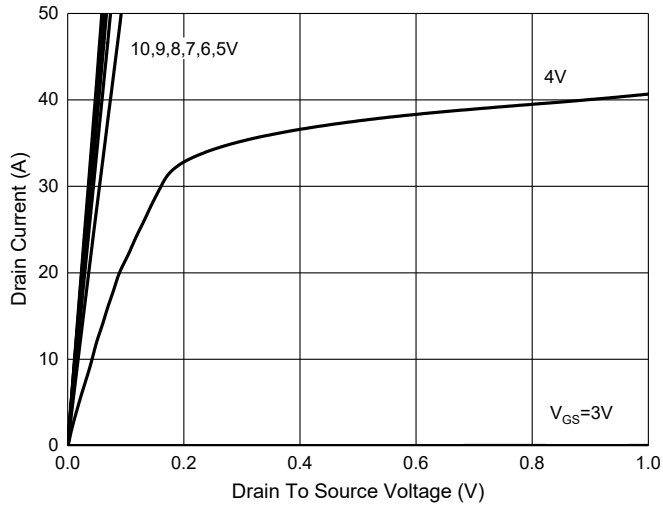


Fig. 2 -  $R_{DS(ON)} - V_{GS}$

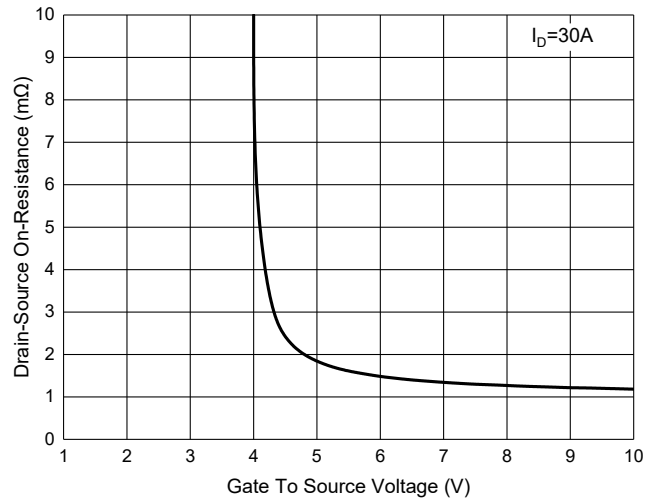


Fig. 3 -  $R_{DS(ON)} - I_D$

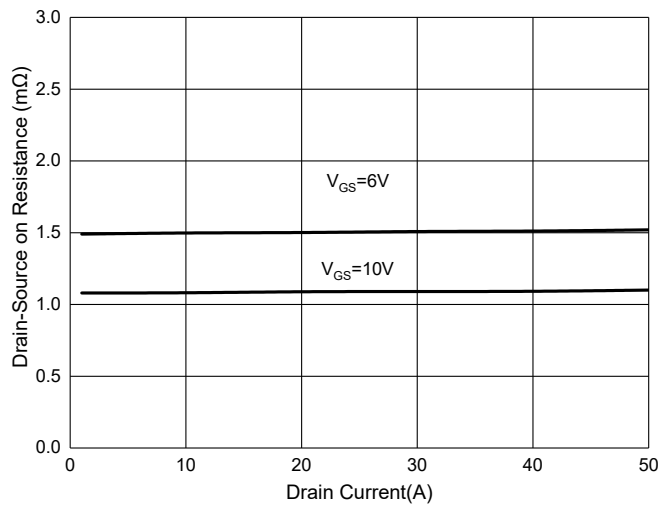


Fig. 4 - Normalized On Resistance Characteristics

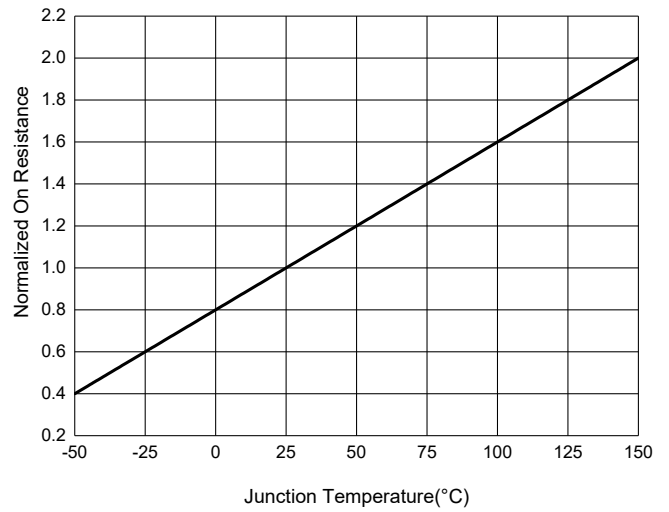


Fig. 5 - Capacitance Characteristics

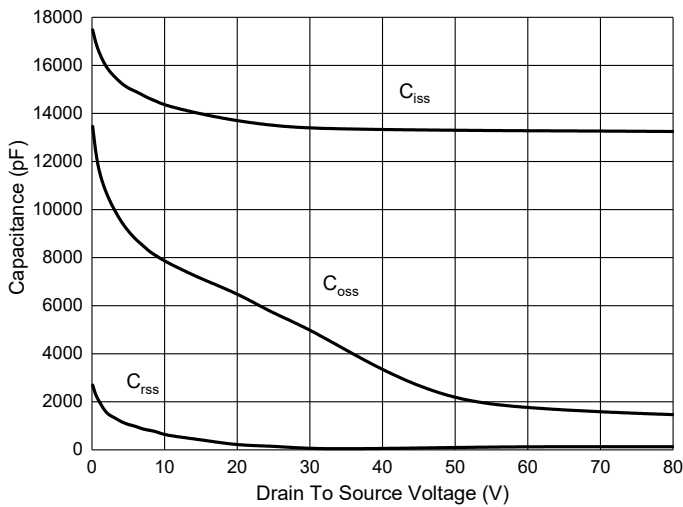
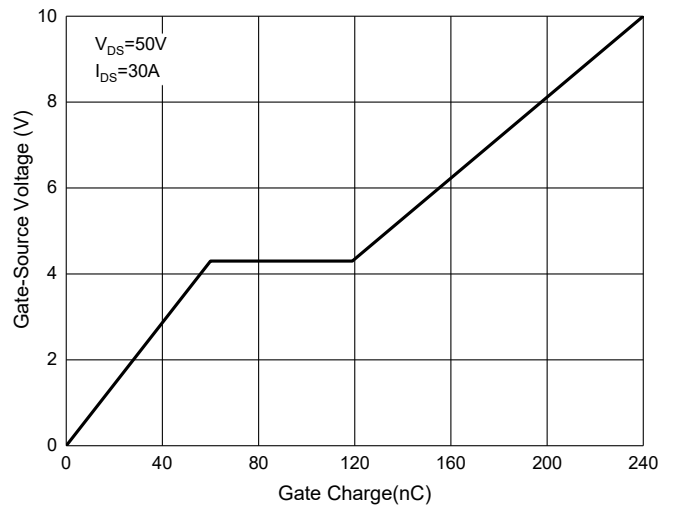


Fig. 6 - Gate Charge



**Curve Characteristics**

Fig. 7 -  $I_S - V_{SD}$

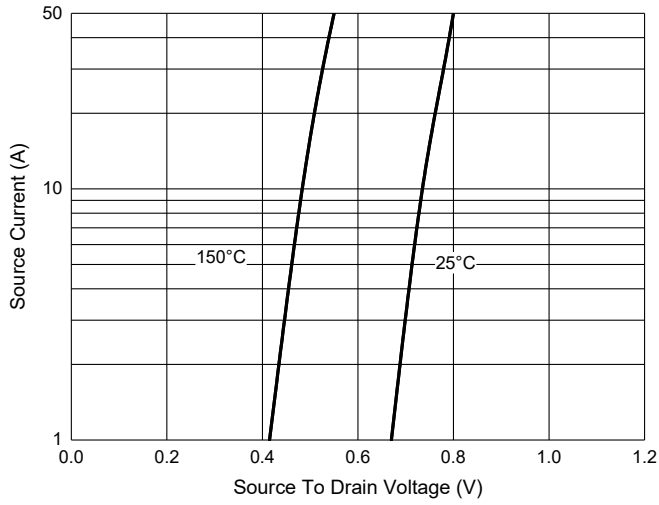
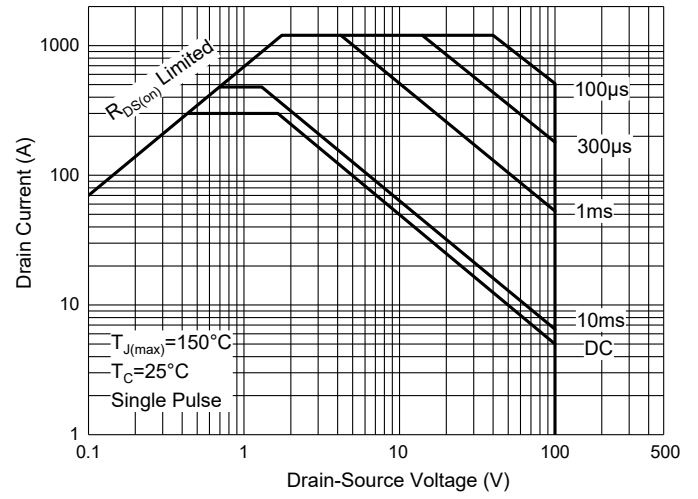


Fig. 8 - Safe Operation Area



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 2Kpcs/Reel

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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