

### Features

- Split Gate Trench MOSFET Technology
- Excellent Package For Heat Dissipation
- Moisture Sensitivity Level 1
- Halogen Free."Green"Device<sup>(Note 1)</sup>
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

### Maximum Ratings

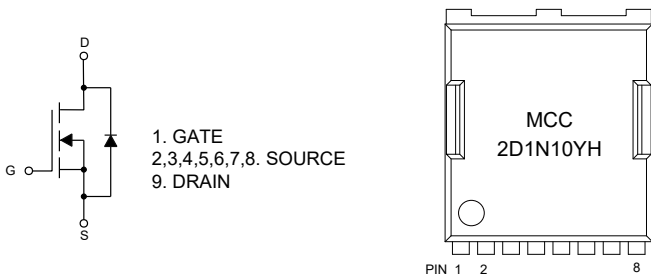
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 45°C/W Junction to Ambient<sup>(Note 2)</sup>
- Thermal Resistance: 0.5°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	T <sub>C</sub> =25°C	265
		T <sub>C</sub> =100°C	187
Pulsed Drain Current <sup>(Note 3)</sup>	I <sub>DM</sub>	1060	A
Total Power Dissipation <sup>(Note 4)</sup>	P <sub>D</sub>	375	W
Single Pulsed Avalanche Energy <sup>(Note 5)</sup>	E <sub>AS</sub>	1482	mJ

Note:

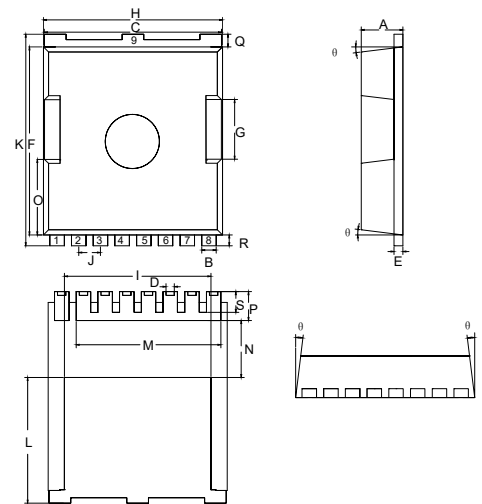
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> =25°C.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P<sub>D</sub> is based on max. junction temperature, using junction-case thermal resistance.
5. T<sub>J</sub>=25°C, V<sub>DD</sub>= 50V, V<sub>GS</sub>=10V, R<sub>G</sub>=25Ω, L=2mH.

### Internal Structure and Marking Code



## N-CHANNEL MOSFET

### TOLL-8L



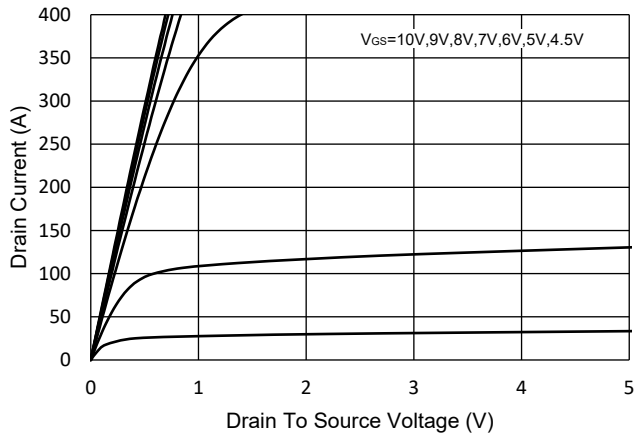
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.028	0.035	0.70	0.90	
C	0.382	0.390	9.70	9.90	
D	0.017	0.020	0.42	0.50	
E	0.016	0.024	0.40	0.60	
F	0.405	0.417	10.28	10.58	
G	0.122	0.138	3.10	3.50	
H	0.382	0.398	9.70	10.10	
I	0.311	0.327	7.90	8.30	
J	0.047		1.20		BSC
K	0.452	0.468	11.48	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)**

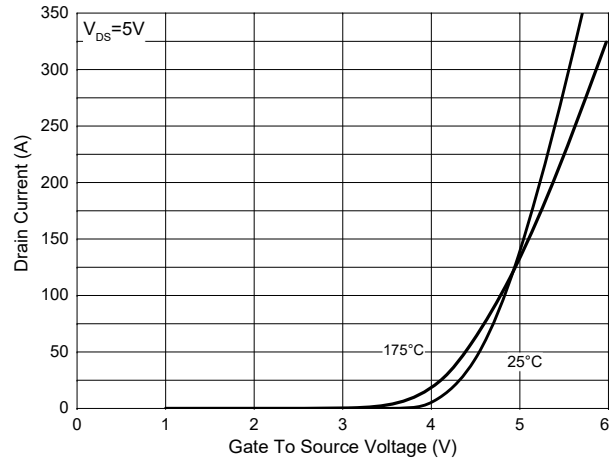
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.2	3	3.8	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=50A$		1.5	2.1	m $\Omega$
Gate Resistance	$R_g$	f=1 MHz, Open drain		0.9		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				265	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=30A$			1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=50A, di/dt=100A/\mu s$		93		ns
Reverse Recovery Charge	$Q_{rr}$			157		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		9600		pF
Output Capacitance	$C_{oss}$			3245		
Reverse Transfer Capacitance	$C_{rss}$			48		
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=50A$		133		nC
Gate-Source Charge	$Q_{gs}$			55		
Gate-Drain Charge	$Q_{gd}$			17		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_{GEN}=3\Omega, I_D=50A$		30		ns
Turn-On Rise Time	$t_r$			48		
Turn-Off Delay Time	$t_{d(off)}$			59		
Turn-Off Fall Time	$t_f$			34		

## Curve Characteristics

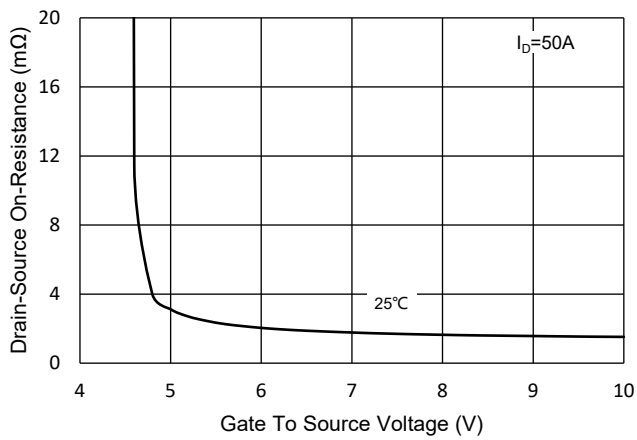
**Fig.1 - Typical Output Characteristics**



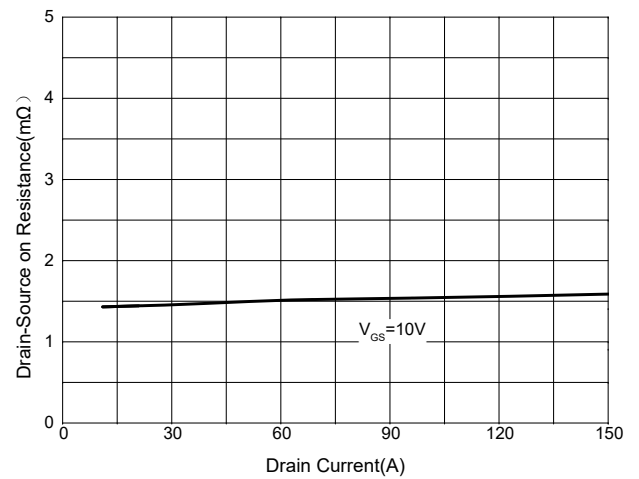
**Fig. 2 - Transfer Characteristics**



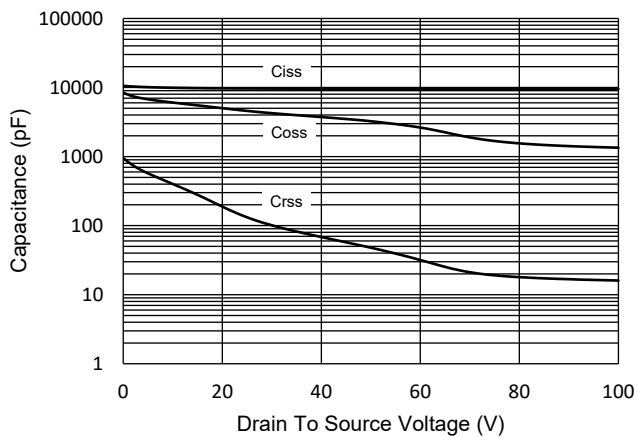
**Fig.3 -  $R_{DS(ON)}$  -  $V_{GS}$**



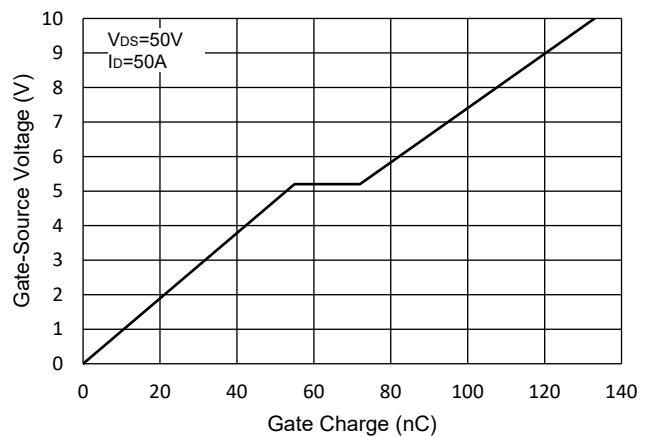
**Fig. 4 -  $R_{DS(ON)}$  -  $I_D$**



**Fig.5 - Capacitance Characteristics**

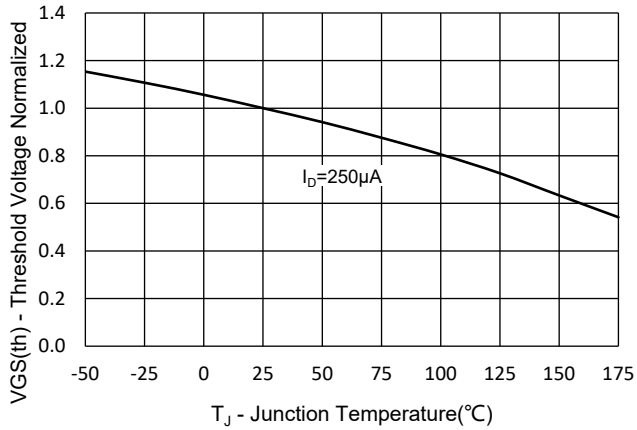


**Fig.6 - Gate Charge**

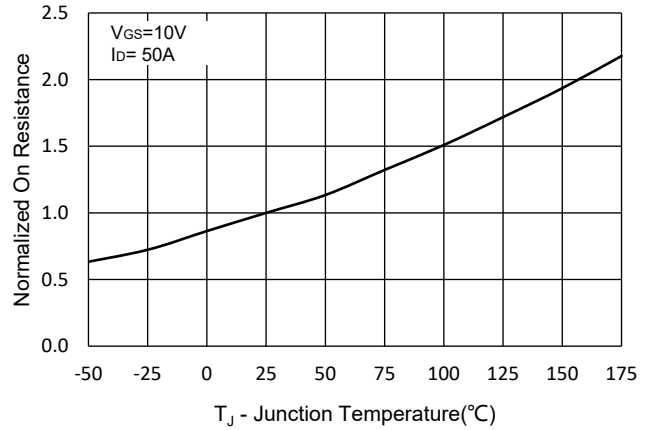


**Curve Characteristics**

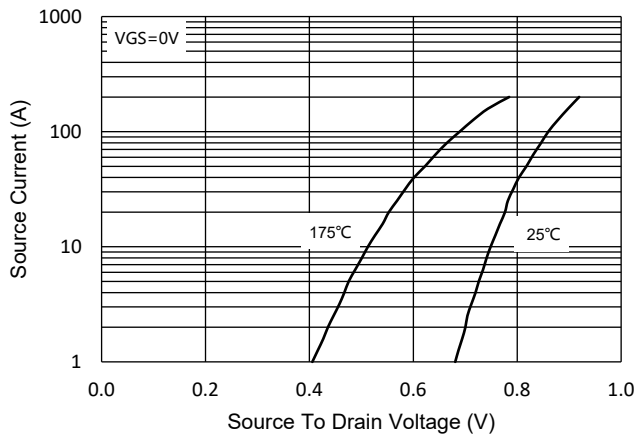
**Fig.7 - Normalized Threshold Voltage**



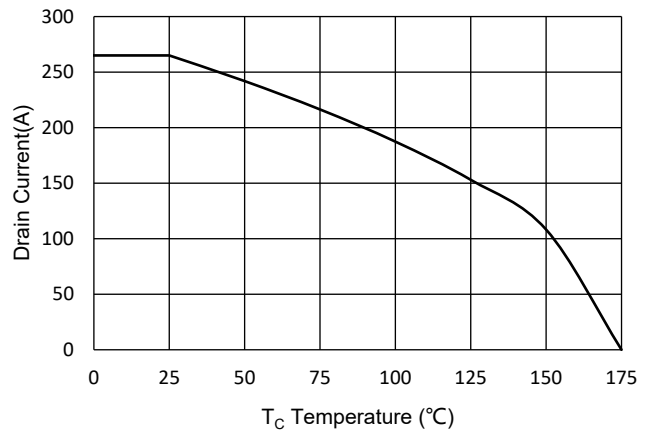
**Fig.8 - Normalized On Resistance Characteristics**



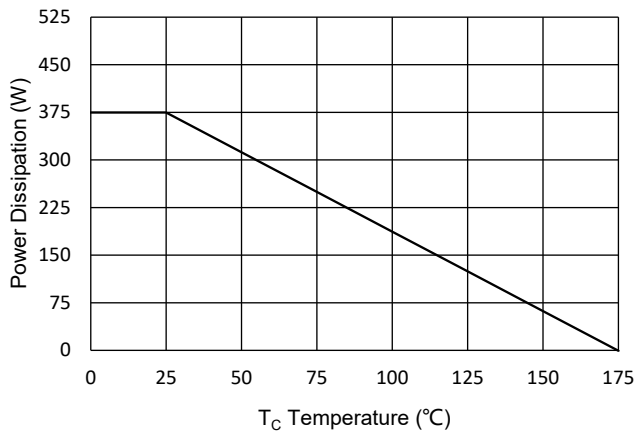
**Fig.9 - I<sub>S</sub> - V<sub>SD</sub>**



**Fig.10 - Drain Current**



**Fig.11 - PD Dissipation**



## Curve Characteristics

Fig.12 - Safe Operation Area

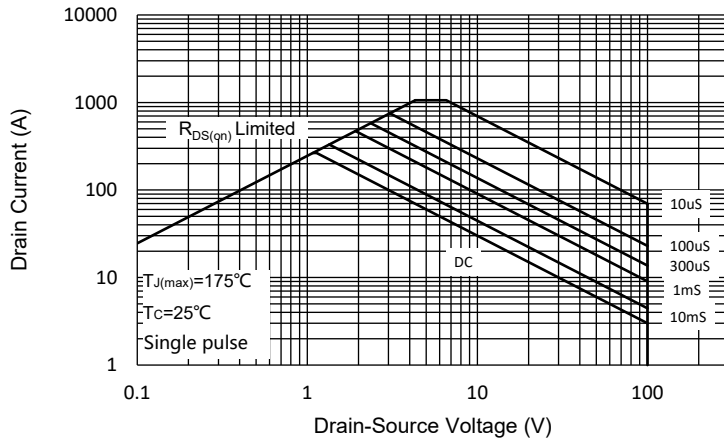
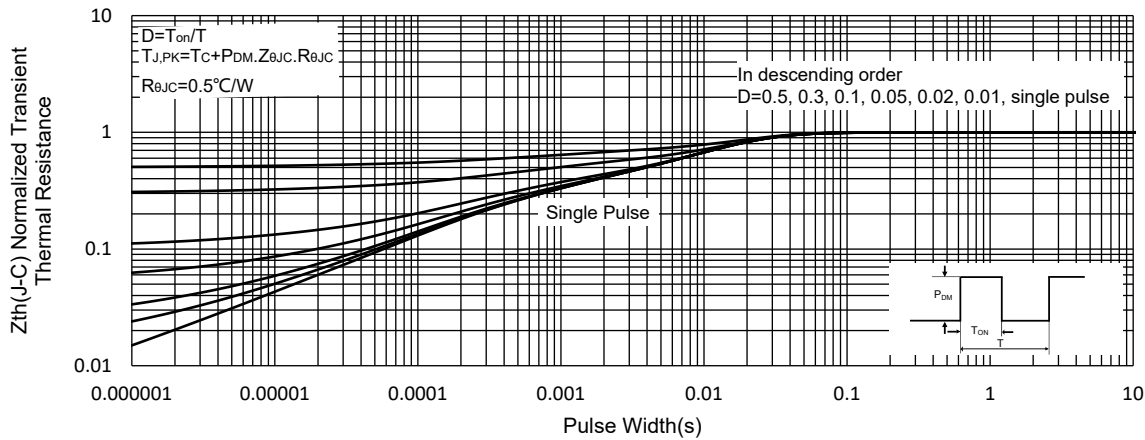


Fig.13 - Normalized Transient Thermal Impedance



## Ordering Information

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

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