

## Features

- Split Gate Trench MOSFET Technology
- Top-Side Cooling Package for Heat Dissipation
- Moisture Sensitivity Level 1
- Halogen Free."Green" Device<sup>(Note1)</sup>
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant<sup>(Note2)</sup> ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

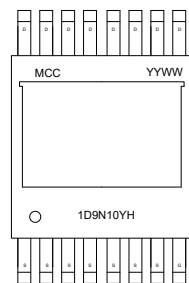
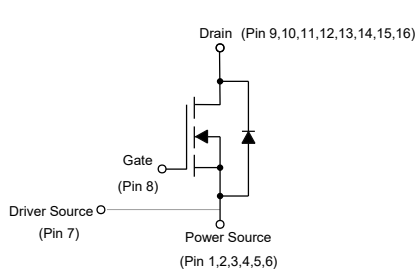
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 37°C/W Junction to Ambient<sup>(Note3)</sup>
- Thermal Resistance: 0.48°C/W Junction to Case(Top)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	272
		$T_C=100^\circ\text{C}$	193
Pulsed Drain Current <sup>(Note4)</sup>	$I_{DM}$	1088	A
Total Power Dissipation <sup>(Note5)</sup>	$P_D$	312	W
Single Pulsed Avalanche Energy <sup>(Note6)</sup>	$E_{AS}$	1225	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. High Temperature Solder Exemption Applied, see EU Directive Annex 7(a)-I.
3. 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  $T_A=25^\circ\text{C}$ .
4. Repetitive rating; pulse width limited by max. junction temperature.
5.  $P_D$  is based on max. junction temperature, using junction-case(Top) thermal resistance.
6.  $T_J=25^\circ\text{C}, V_{DD}=80\text{V}, V_{GS}=10\text{V}, R_G=25\Omega, L=2\text{mH}$ .

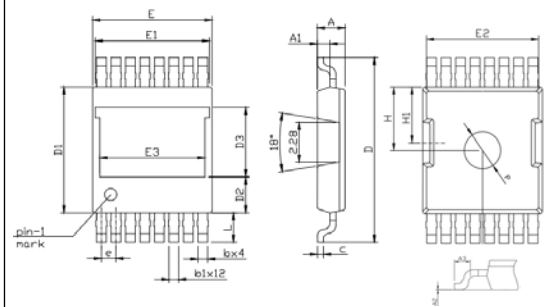
## Internal Structure and Marking Code



4 codes in total  
YY is the year  
WW is the week

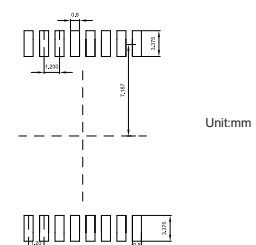
# N-CHANNEL MOSFET

## TOLT



DIM	DIMENSIONS				NOTE
	INCHES		Millimeter		
A	0.088	0.093	2.25	2.35	
A1	0.039	0.043	1.00	1.08	
A2	0.000	0.006	0.01	0.16	
A3	0.059		1.50		REF
b	0.027	0.031	0.70	0.80	
b1	0.023	0.031	0.60	0.80	
c	0.015	0.023	0.40	0.60	
D	0.582	0.598	14.80	15.20	
D1	0.393	0.406	10.00	10.30	
D2	0.102	0.118	2.60	3.00	
D3	0.227		5.77		REF
E	0.381	0.398	9.70	10.10	
E1	0.372		9.46		REF
E2	0.364		9.25		REF
E3	0.342		8.70		REF
e	0.046	0.048	1.18	1.22	
H	0.196	0.213	5.00	5.40	
H1	0.173	0.189	4.40	4.80	
L	0.094	0.098	2.40	2.50	
P	0.110	0.126	2.80	3.20	

## Suggested Solder Pad Layout



**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	3.0	3.8	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=50A$		1.5	1.9	m $\Omega$
Gate Resistance	$R_g$	f=1MHz, Open Drain		0.8		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				272	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=50A$			1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=50A, di_F/dt=100A/\mu s$		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	$C_{riss}$			48		
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=50A$		132.5		nC
Gate-Source Charge	$Q_{gs}$			55		
Gate-Drain Charge	$Q_{gd}$			17		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_G=3\Omega, I_{DS}=50A$		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

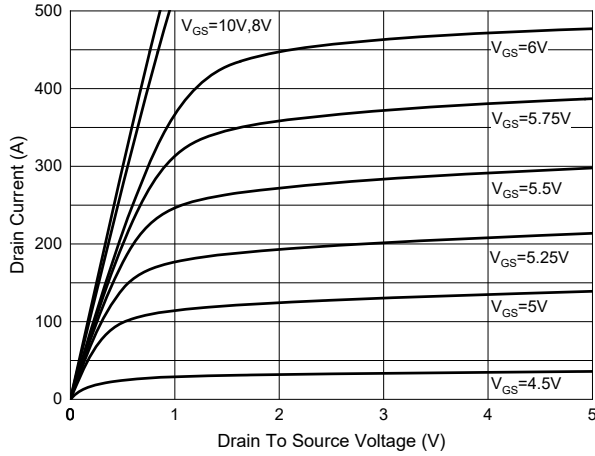


Fig. 2 - Transfer Characteristics

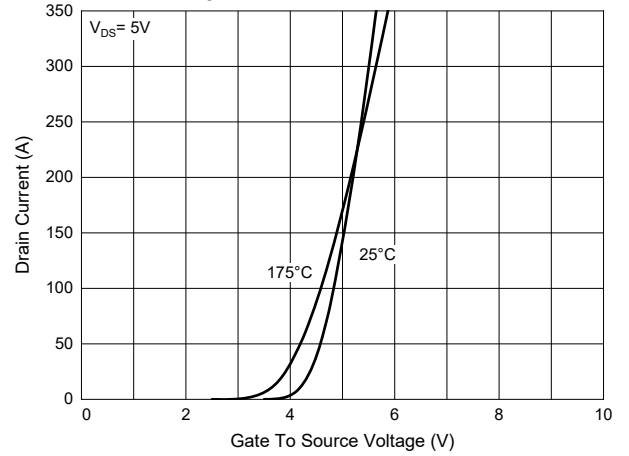


Fig.3- $R_{DS(ON)}$ - $V_{GS}$

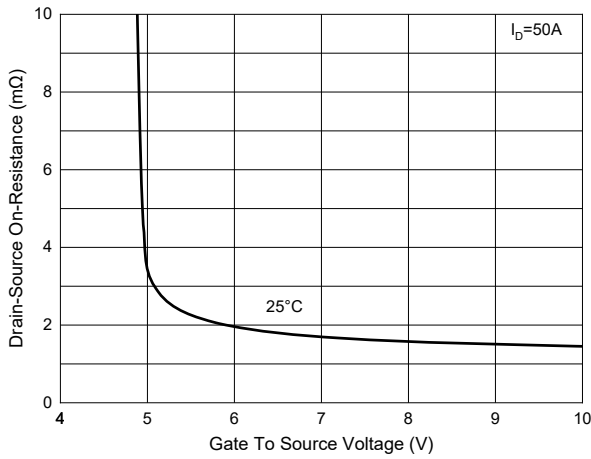


Fig.4- $R_{DS(ON)}$ - $I_D$

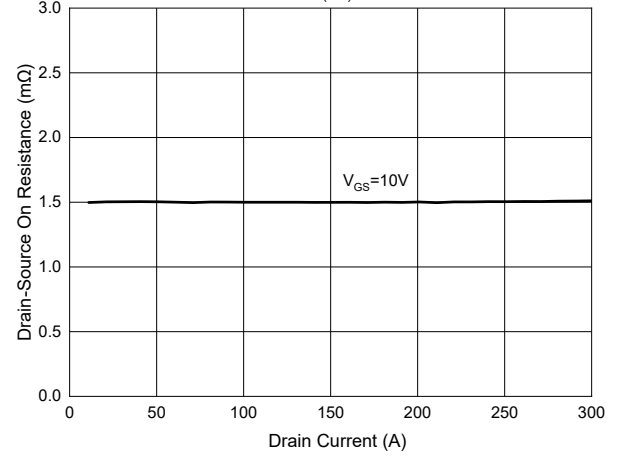


Fig. 5 - Capacitance Characteristics

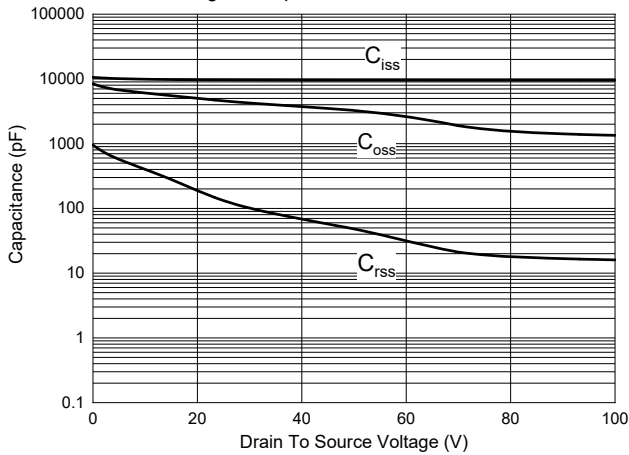
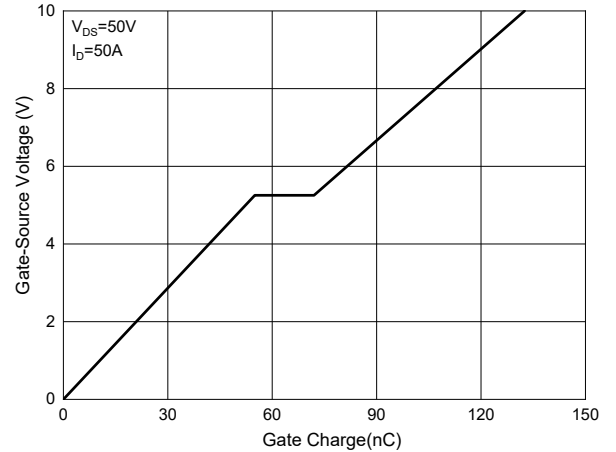


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

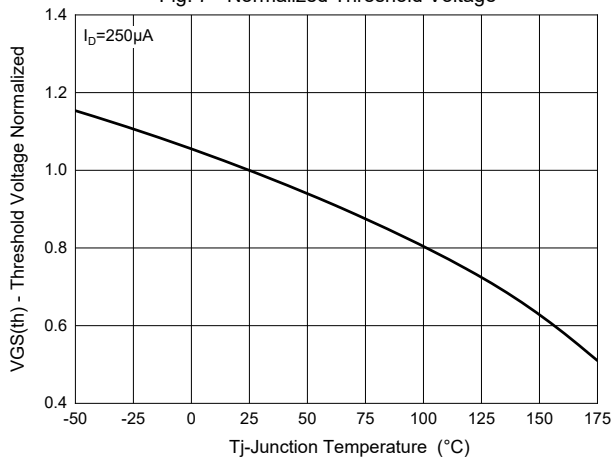


Fig. 8 - Normalized On Resistance Characteristics

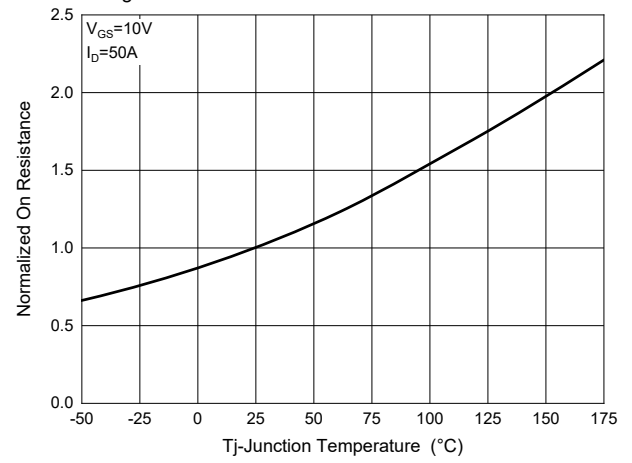


Fig.9- $I_S$ - $V_{SD}$

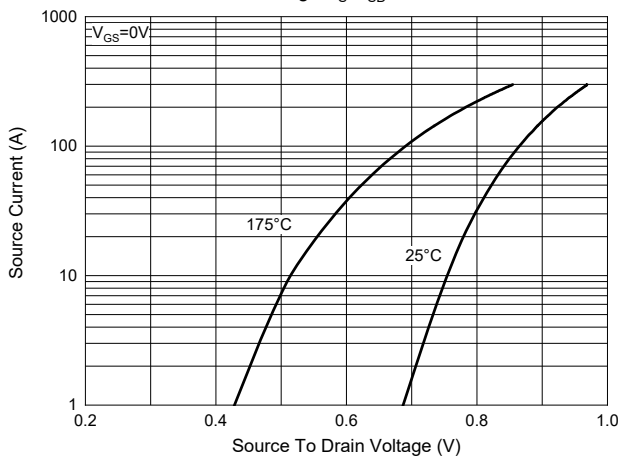


Fig. 10 - Drain Current

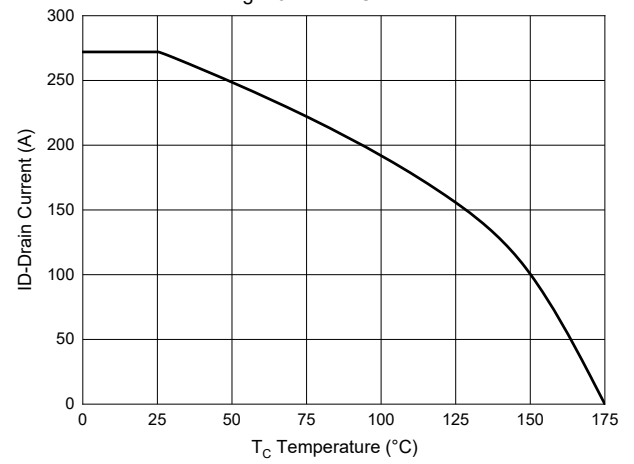
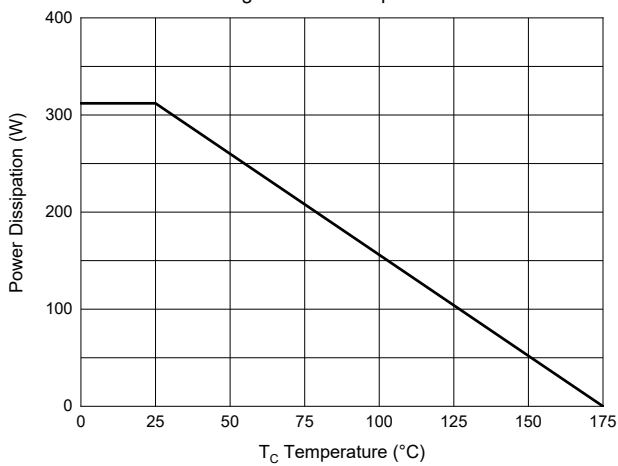


Fig. 11 - PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

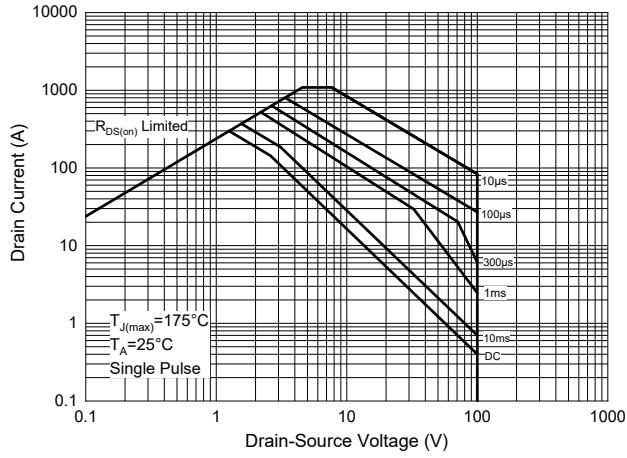
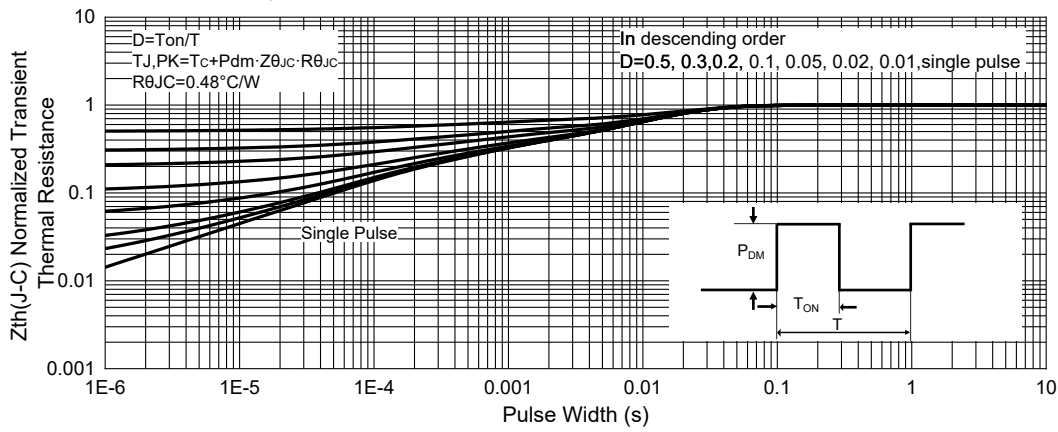


Fig. 13 - Normalized Transient Thermal Impedance



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 1.2Kpcs/Reel

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