

## Features

- Trench LV MOSFET Technology
- ESD Protected Up To 2KV(HBM)
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

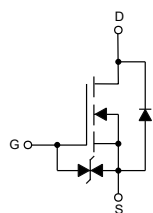
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Maximum Thermal Resistance: 138°C/W Junction to Ambient(Notes 2)

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	20	V	
Gate-Source Voltage	$V_{GS}$	±10	V	
Drain Current-Continuous	$I_D$	$T_A=25^\circ\text{C}$	0.75	A
		$T_A=100^\circ\text{C}$	0.47	
Pulsed Drain Current(Notes 3)	$I_{DM}$	3	A	
Power Dissipation(Notes 4)	$P_D$	0.9	W	

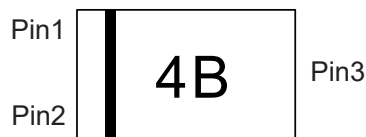
### Note:

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  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ\text{C}$ .
3. Repetitive rating; pulse width limited by max. junction temperature.
4.  $P_D$  is based on max. junction temperature, using junction to ambient thermal resistance.

## Internal Structure and Marking Code

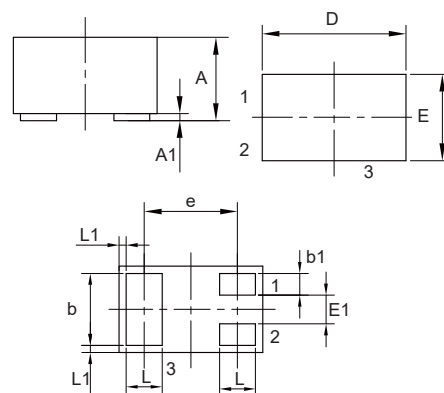


1. GATE
2. SOURCE
3. DRAIN



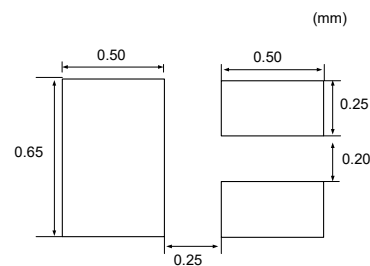
## N-Channel MOSFET

### DFN1006-3A



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.013	0.016	0.34	0.40	
A1	0.000	0.002	0.00	0.05	
b	0.018	0.022	0.45	0.55	
b1	0.004	0.008	0.10	0.20	
D	0.037	0.042	0.95	1.075	
E	0.022	0.026	0.55	0.675	
E1	0.006	0.010	0.15	0.25	
e	0.026		0.65		TYP.
L	0.008	0.012	0.20	0.30	
L1	0.0002		0.05		TYP.

### Suggested Solder Pad Layout



**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.35	0.7	1.2	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$			1.0	$\mu A$
Gate-body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$			$\pm 10$	$\mu A$
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=0.5A$		173	250	m $\Omega$
		$V_{GS}=2.5V, I_D=0.4A$		250	340	
		$V_{GS}=1.8V, I_D=0.2A$		405	950	
Gate Resistance	$R_g$	f=1 MHz, Open drain		44		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				0.75	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=0.5A$			1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=0.1A, dI_F/dt=100A/\mu s$		5.5		ns
Reverse Recovery Charge	$Q_{rr}$			0.8		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=16V, V_{GS}=0V, f=1MHz$		33		pF
Output Capacitance	$C_{oss}$			10		
Reverse Transfer Capacitance	$C_{rss}$			5.6		
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=4.5V, I_D=0.1A$		1.2		nC
Gate-Source Charge	$Q_{gs}$			0.2		
Gate-Drain Charge	$Q_{gd}$			0.2		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=10V, V_{GS}=4.5V$ $I_D=0.5A, R_G=10\Omega$		5.4		ns
Turn-on Rise Time	$t_r$			5.2		
Turn-off Delay Time	$t_{d(off)}$			10.5		
Turn-off Fall Time	$t_f$			5.7		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

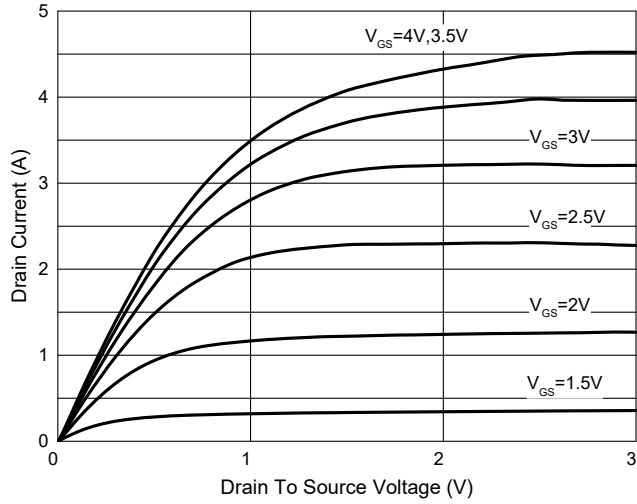


Fig. 2 - Transfer Characteristics

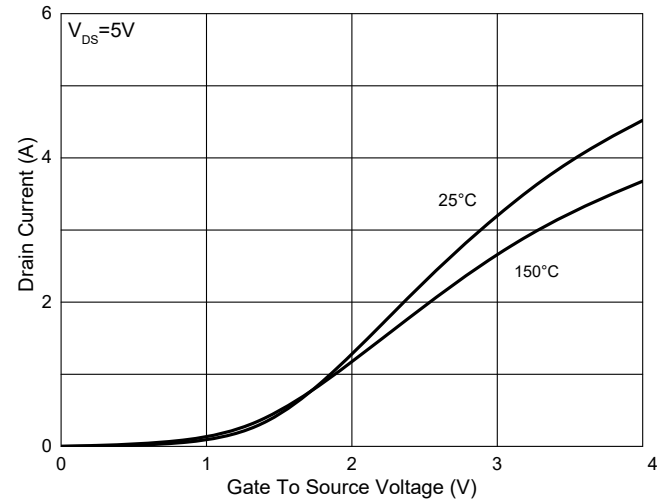


Fig. 3 -  $R_{DS(ON)} - V_{GS}$

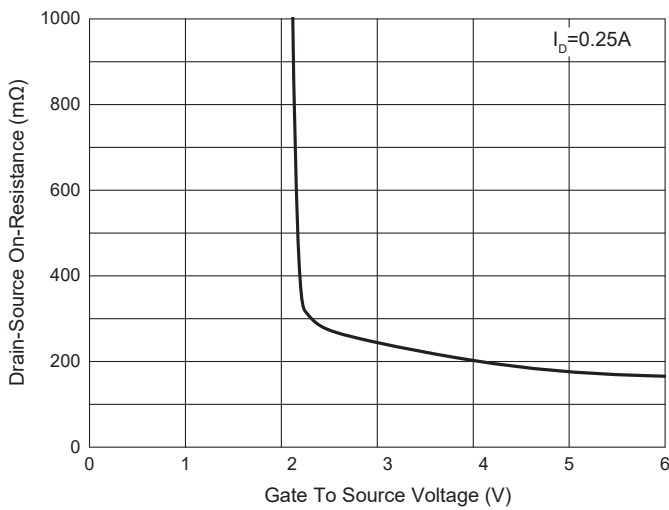


Fig. 4 -  $R_{DS(ON)} - I_D$

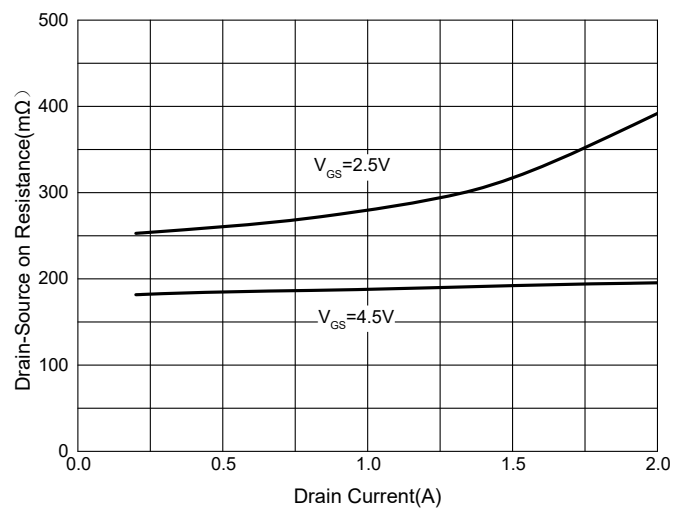


Fig. 5 - Capacitance Characteristics

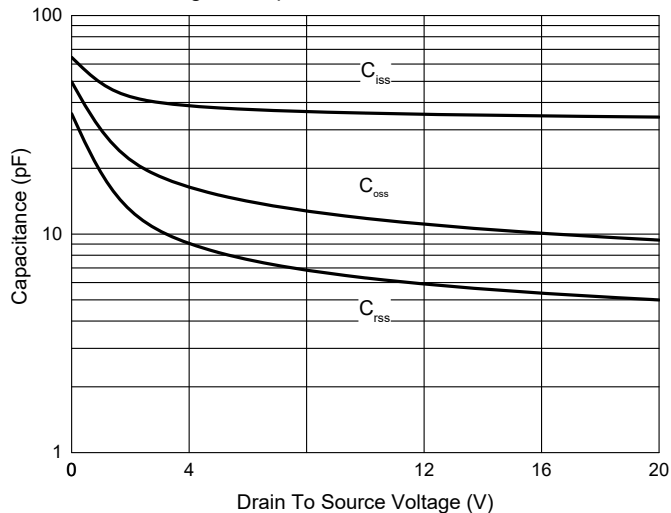
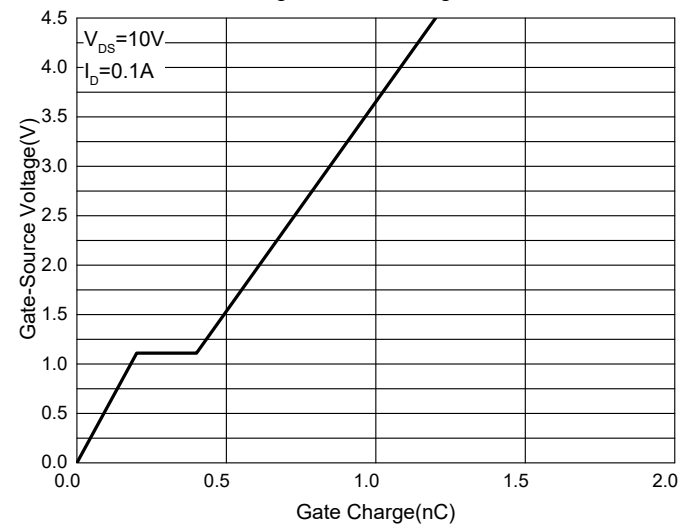


Fig. 6 - Gate Charge



**Curve Characteristics**

Fig. 7 - Normalized Threshold Voltage

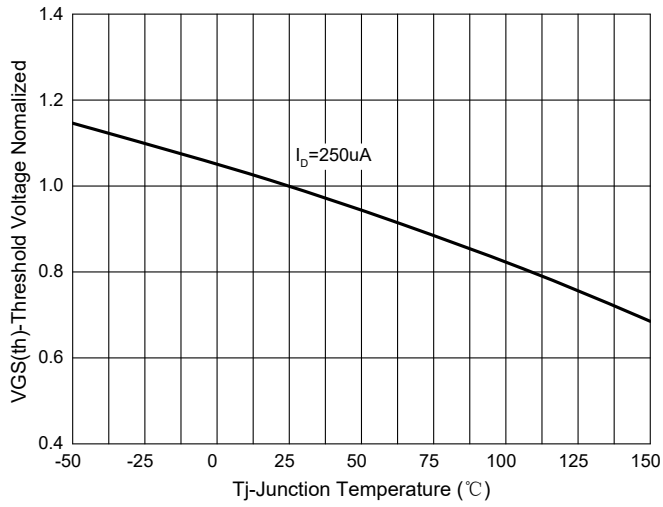


Fig.8-Normalized On Resistance Characteristics

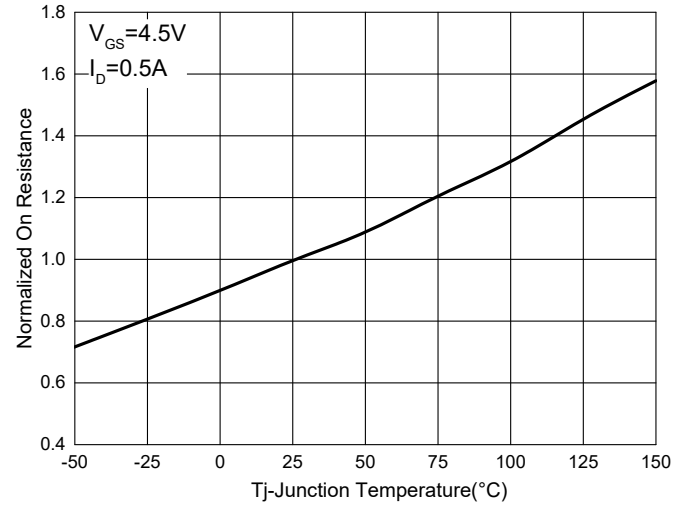


Fig.9 -  $I_S - V_{SD}$

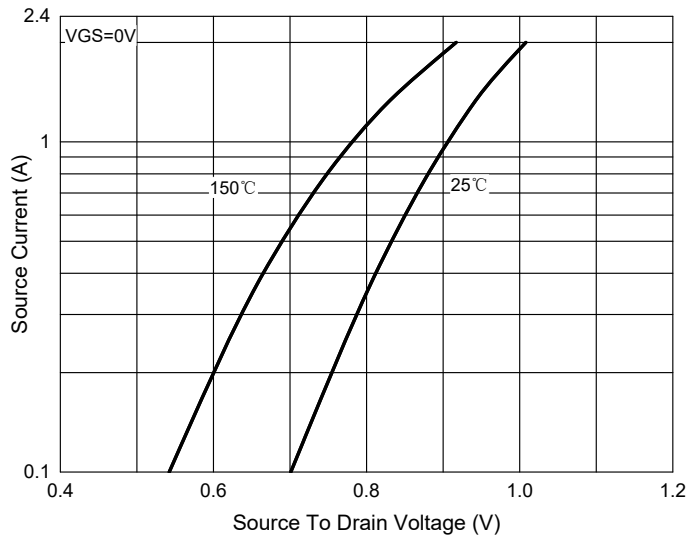


Fig. 10 - Drain Current

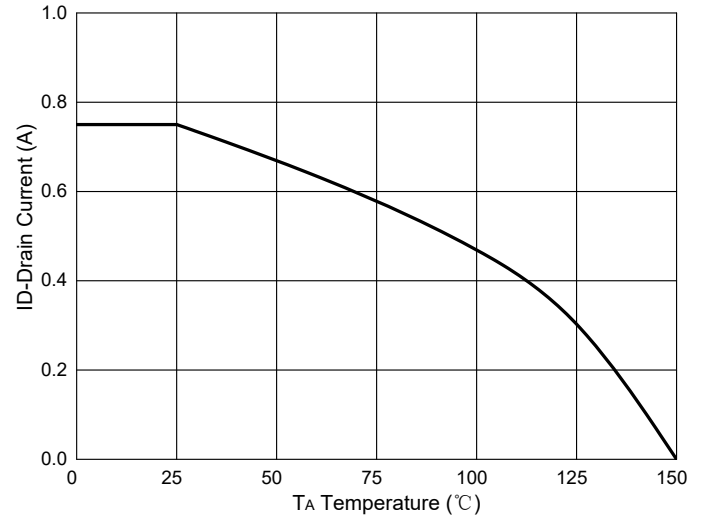
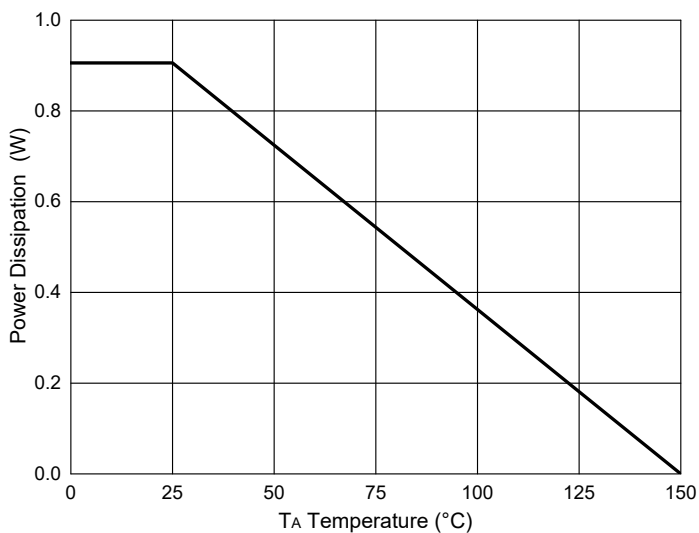


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

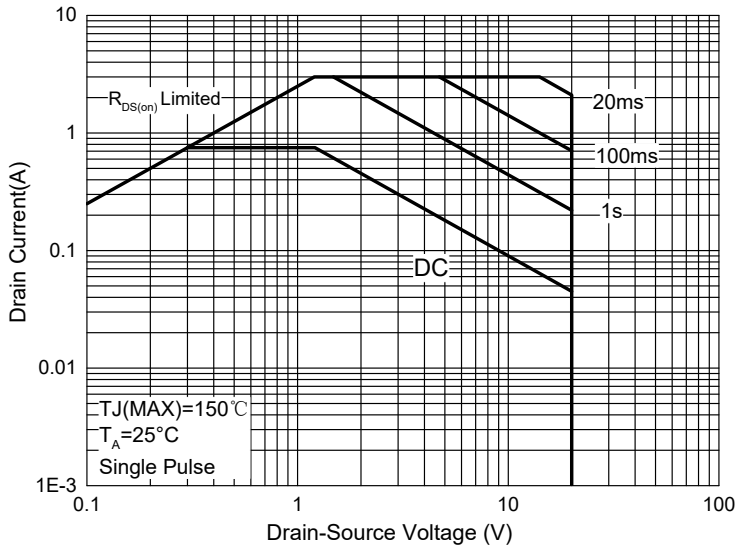
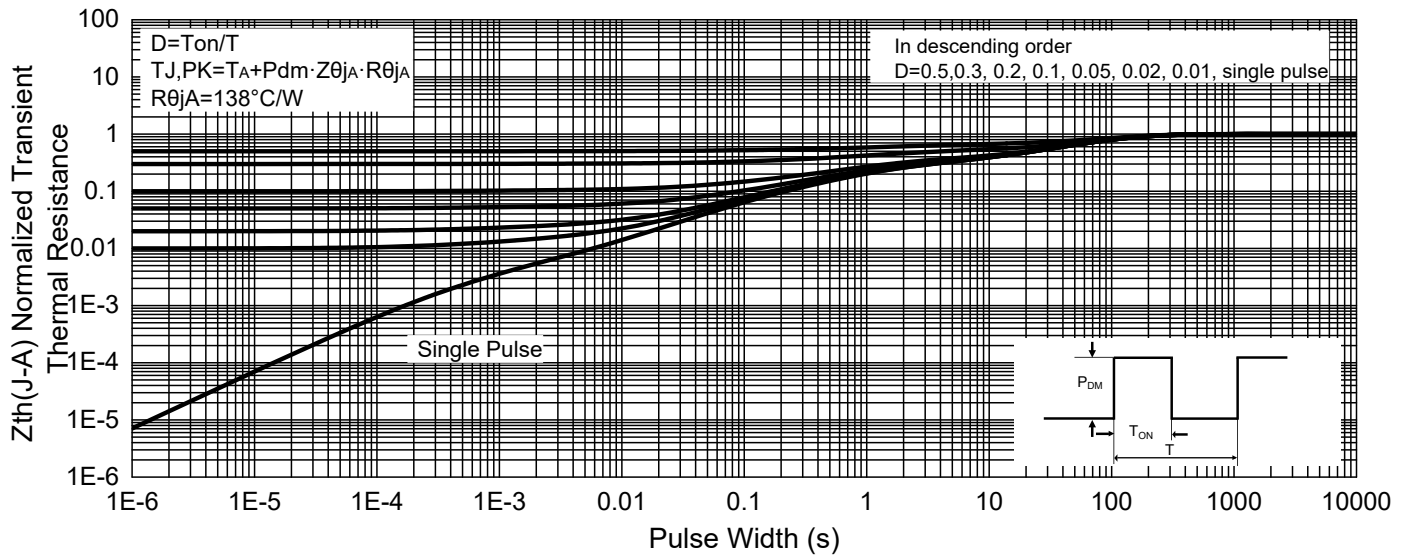


Fig. 13 - Normalized Transient Thermal Impedance



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:10Kpcs/Reel

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