

## Features

- Trench Power LV MOSFET Technology
- High Speed Switching
- High Density Cell Design for Low  $R_{DS(on)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

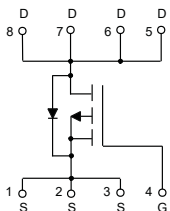
## Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 3.9°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	±25	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	-30
		$T_C=100^\circ\text{C}$	-24
		$T_A=25^\circ\text{C}$	-11
		$T_A=70^\circ\text{C}$	-9
Pulsed Drain Current (Note 2)	$I_{DM}$	-160	A
Avalanche Energy	$E_{AS}$	72	mJ
Total Power Dissipation	$P_D$	32	W

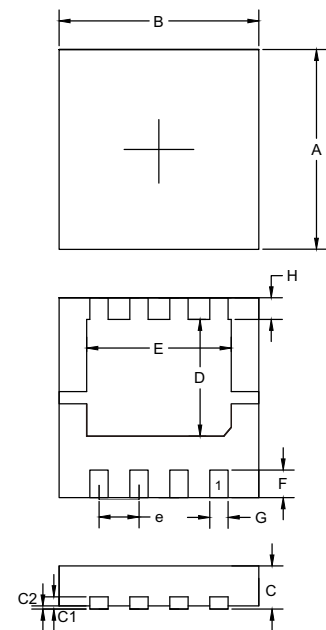
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.  
2. Pulse Test: Pulse Width ≤ 300µs, Duty cycle ≤ 2%.

## Internal Structure and Marking Code



# P-CHANNEL MOSFET

## DFN3333



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.126	0.130	3.20	3.30	
B	0.126	0.130	3.20	3.30	
C	0.030	0.033	0.75	0.85	
C1	0.007	0.009	0.18	0.22	
C2	---	0.002	---	0.05	
D	0.071	0.079	1.80	2.00	
E	0.087	0.098	2.20	2.50	
F	0.016	0.020	0.40	0.50	
G	0.010	0.014	0.25	0.35	
H	0.012	0.016	0.30	0.40	
e	0.024	0.028	0.60	0.70	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 25V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.2	-1.8	-2.8	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-20V, I_D=-20A$		8.6	13	m $\Omega$
		$V_{GS}=-10V, I_D=-15A$		9.8	15	m $\Omega$
		$V_{GS}=-6V, I_D=-12A$		12.1	22	m $\Omega$
		$V_{GS}=-4.5V, I_D=-12A$		15.5	25	m $\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				-30	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-20A$			-1.2	V
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		2050		pF
Output Capacitance	$C_{oss}$			355		
Reverse Transfer Capacitance	$C_{rss}$			301		
Total Gate Charge	$Q_g$	$V_{DS}=-15V, V_{GS}=-10V, I_D=-20A$		29.8		nC
Gate-Source Charge	$Q_{gs}$			4.7		
Gate-Drain Charge	$Q_{gd}$			10		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-10V, V_{DD}=-15V, I_D=-1A, R_{GEN}=2.5\Omega$		14		ns
Turn-On Rise Time	$t_r$			12		
Turn-Off Delay Time	$t_{d(off)}$			26		
Turn-Off Fall Time	$t_f$			10		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

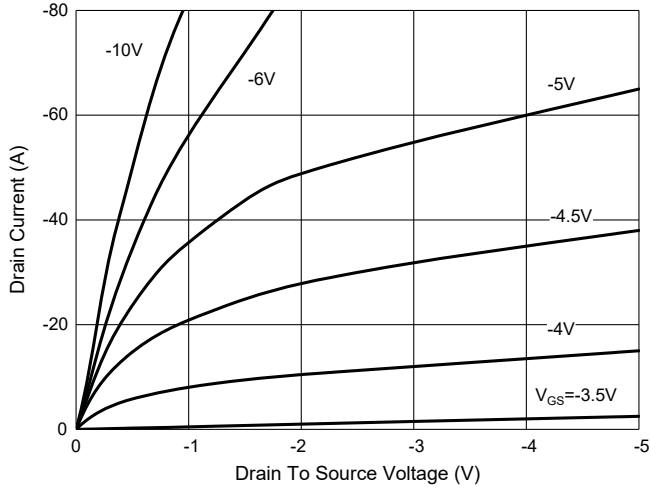


Fig. 2 - Transfer Characteristics

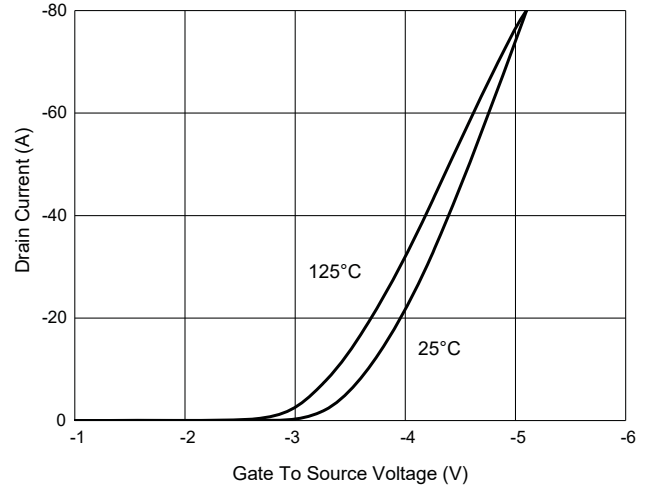


Fig. 3 -  $R_{DS(ON)} - I_D$

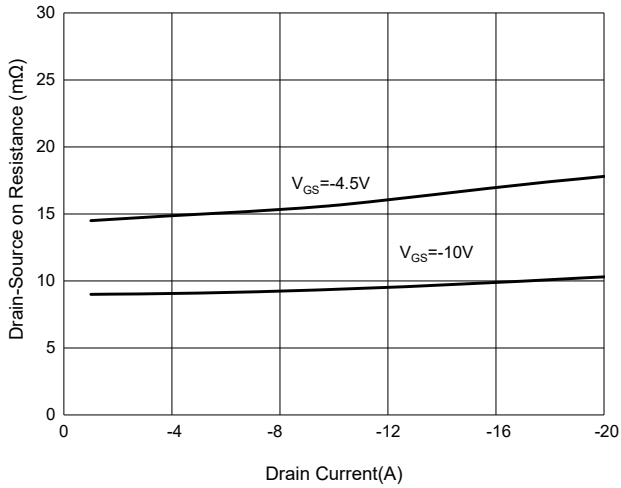


Fig. 4 - Normalized On Resistance Characteristics

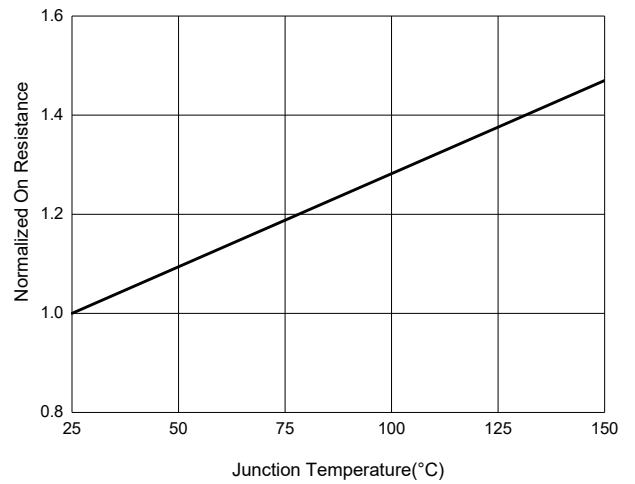


Fig. 5 - Capacitance Characteristics

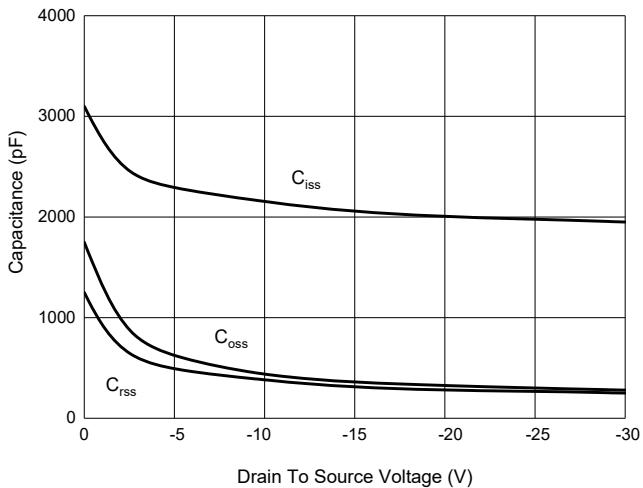
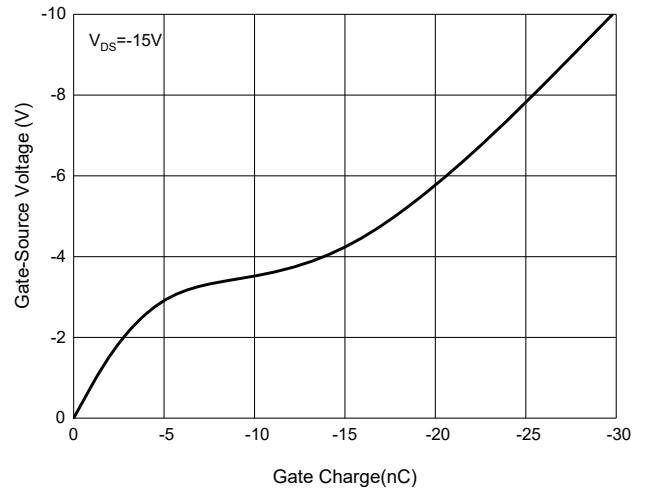


Fig. 6 - Gate Charge



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 5Kpcs/Reel

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