Eternal Semiconductor Inc.

ET6314

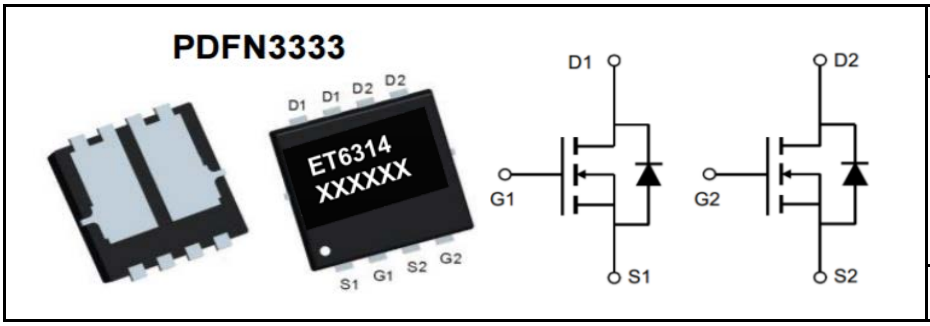
Dual N-Channel High Density Trench MOSFET (30V,28A)

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(on)}$ (mΩ) Typ.
30V	28A	9 @ VGS = 10V, ID=20A
		12@ VGS = 4.5V, ID=10A

Features

- Super high density cell design for extremely low RDS(ON)
- Exceptional on-resistance and maximum DC current capability
- Lead（Pb）-free and halogen-free



TOP Marking
ET6314 XXXXXX
XXXXXX:D/C

Absolute Maximum Ratings (T_A=25°C, unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current (Continuous)@TA=25°C	28	A
	Drain Current (Continuous)@TA=75°C	18	A
I_{DM}	Drain Current (Pulsed) [a]	92	A
P_D	Total Power Dissipation @T_A=25°C	14	W
	Total Power Dissipation @T_A=75°C	7	W
EAS	Avalanche energy，single pulsed	18	Mj
I_S	Maximum Diode Forward Current	28	A
T_j, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	°C
R_{QJA}	Thermal Resistance Junction to Ambient (PCB mounted)[b]	45	°C/W

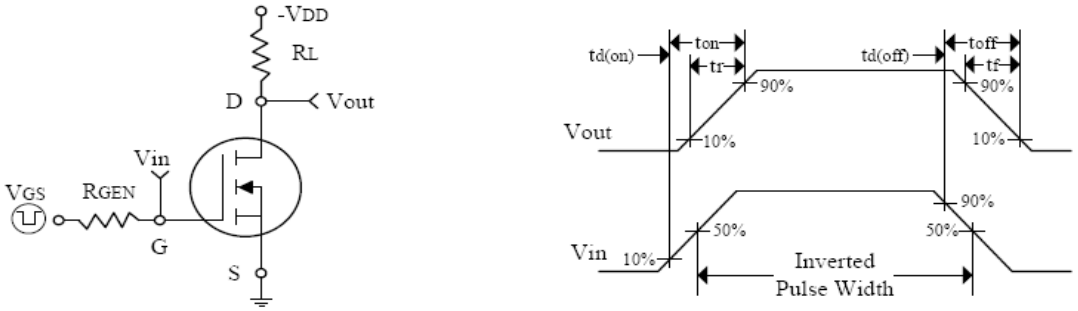
a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

b: 1-in^2 2oz Cu PCB board

Electrical Characteristics (T_A=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
• On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1.0	1.9	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A	-	9	13	mΩ
		V_{GS}=4.5V, I_D=10A	-	12	18	
• Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	-	860	-	PF
C_{oss}	Output Capacitance		-	140	-	
C_{rss}	Reverse Transfer Capacitance		-	105	-	
• Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=15V, I_D=20A, V_{GS}=10V	-	19	-	nC
Q_{gs}	Gate-Source Charge		-	4.3	-	
Q_{gd}	Gate-Drain Charge		-	6.5	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=15V, R_L=15Ω, I_D=20A, V_{GEN}=10V, RG=6Ω	-	6	-	nS
t_r	Turn-on Rise Time		-	5	-	
$t_{d(off)}$	Turn-off Delay Time		-	25	-	
t_f	Turn-off Fall Time		-	7	-	
• Drain-Source Diode Characteristics						
V_{SD}	Drain-Source Diode Forward	V_{GS}=0V, I_S=20A	-	-	1.2	V

Note: Pulse Test: Pulse Width≤300us, Duty Cycle≤2%



Switching Test Circuit and Switching Waveforms

Typical Characteristics Curves (Ta=25°C, unless otherwise note)

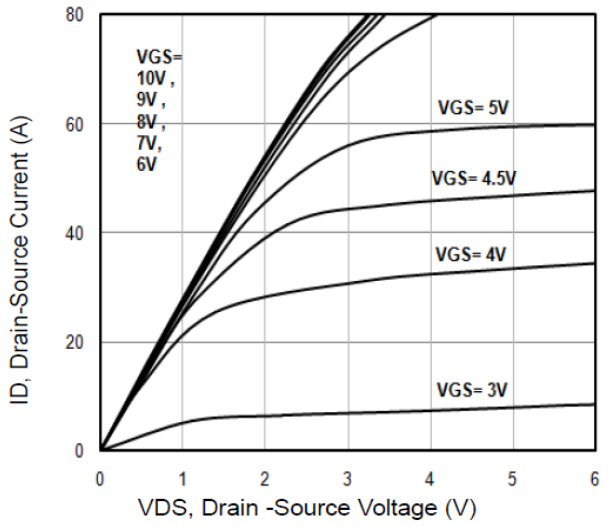


Fig1. Typical Output Characteristics

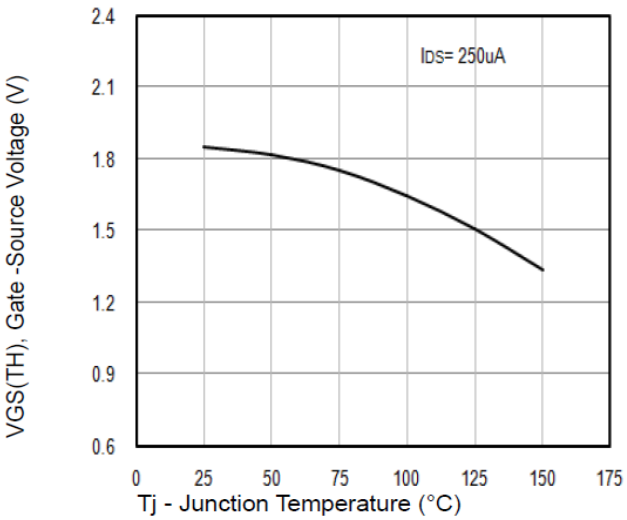


Fig2. $V_{GS(TH)}$ Gate -Source Voltage Vs.Tj

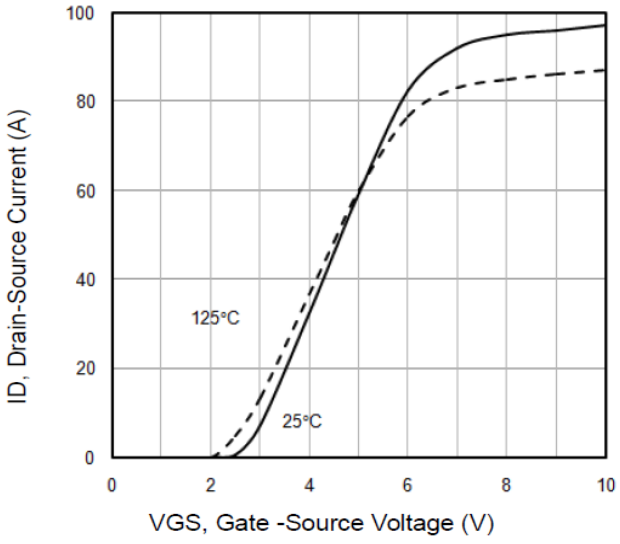


Fig3. Typical Transfer Characteristics

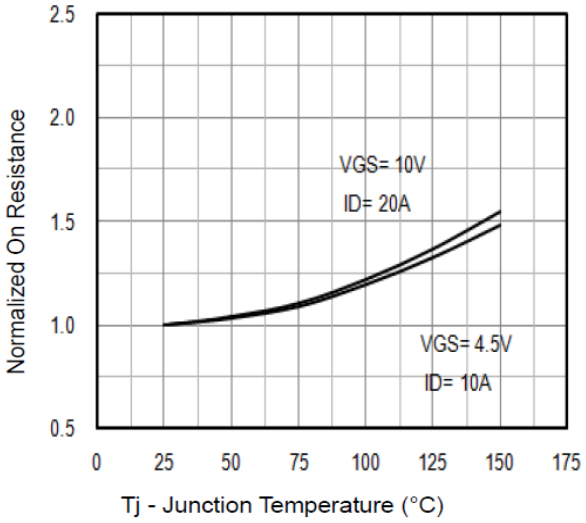


Fig4. Normalized On-Resistance Vs. Tj

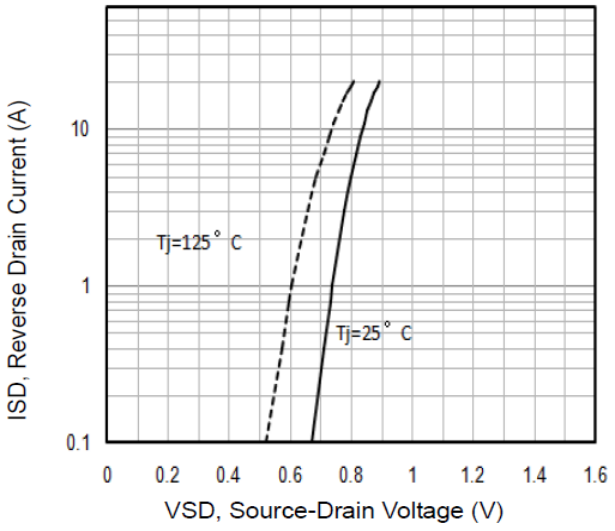


Fig5. Typical Source-Drain Diode Forward Voltage

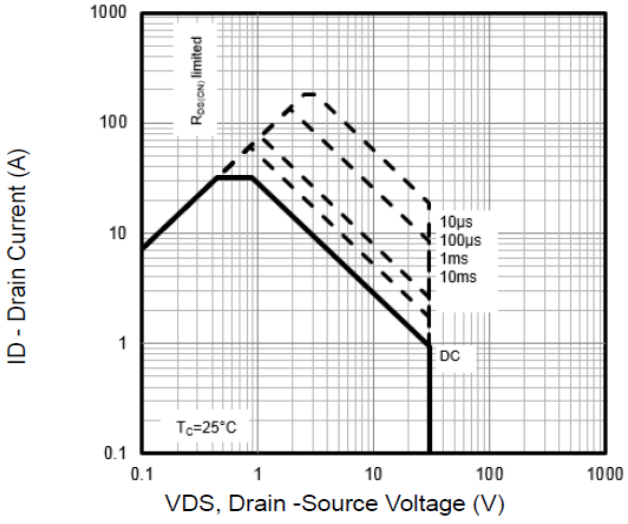


Fig6. Maximum Safe Operating Area

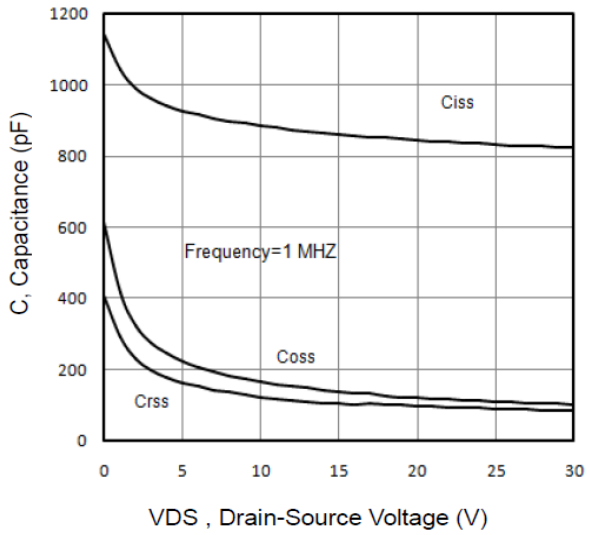


Fig7. Typical Capacitance Vs.Drain-Source Voltage

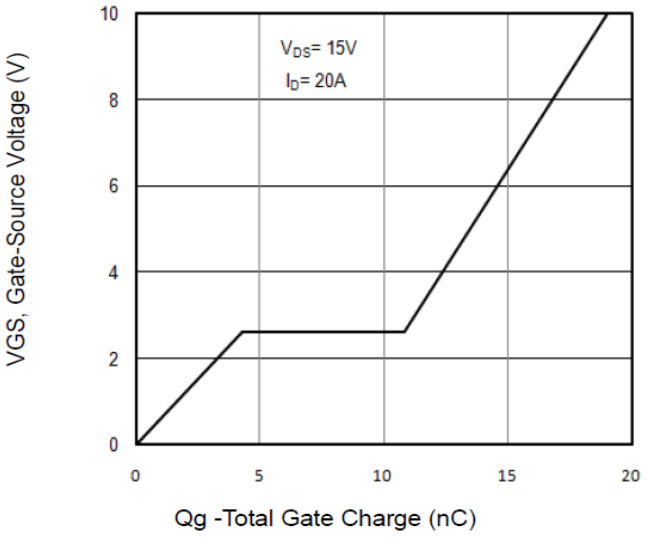


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

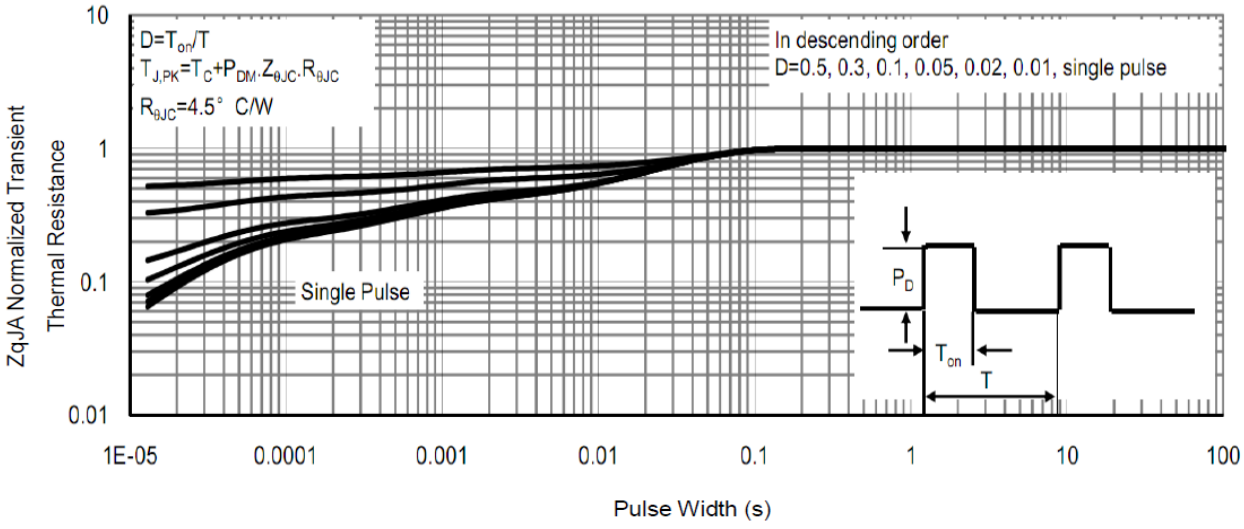
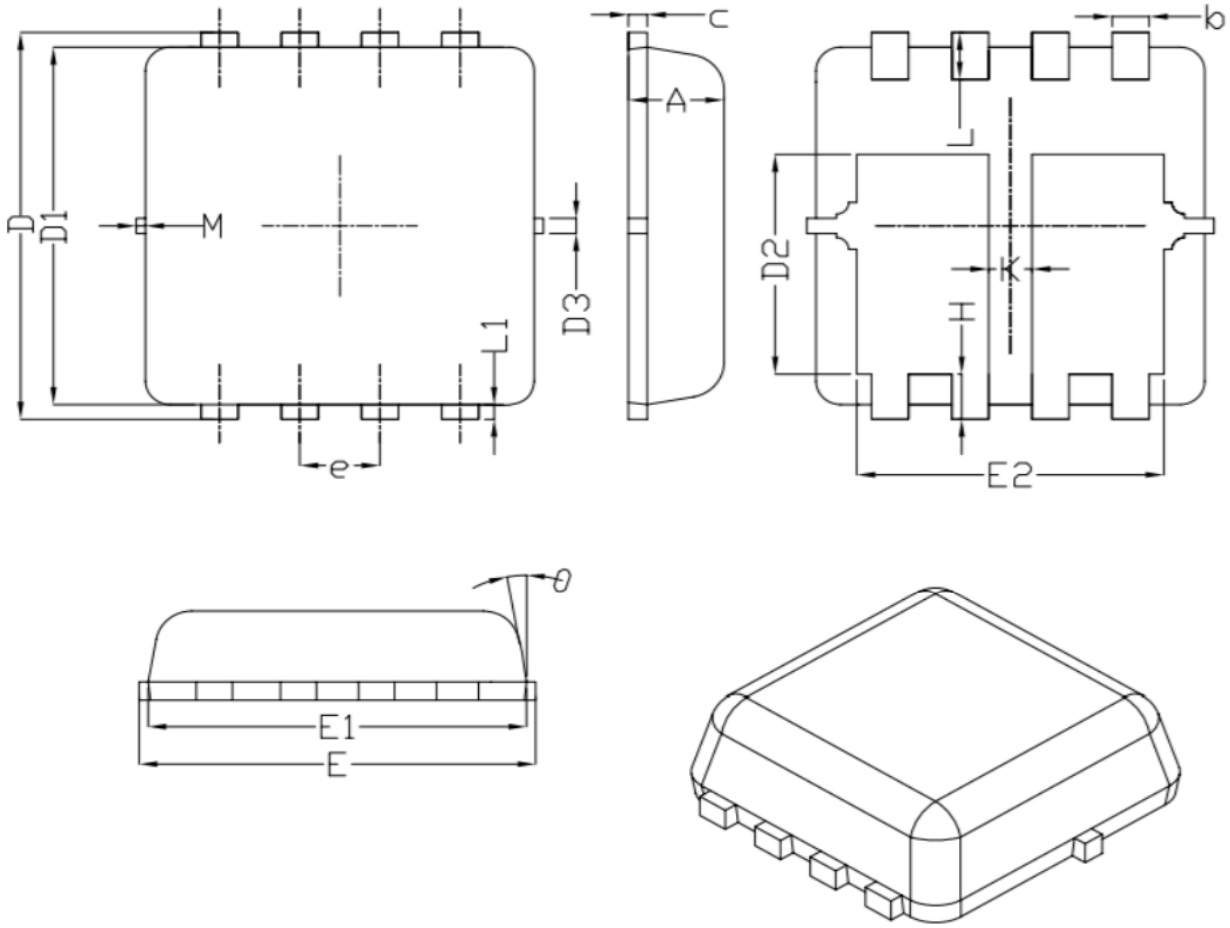


Fig9. Normalized Maximum Transient Thermal Impedance

Dual PDFN3333 Package Outline Data



Symbol	Dimensions （unit： mm)		
	Min	TYP	Max
A	0.70	0.75	0.8
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.2
D2	1.78	1.88	1.98
D3	-	0.13	-
E	3.20	3.30	3.4
E1	3.00	3.15	3.2
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.5
L	0.30	0.40	0.5
L1	-	0.13	-
K	0.30	-	-
θ	-	10^{O}	12^{O}
M	*	*	0.15