Eternal Semiconductor Inc.

YI-YUAN

EV3404

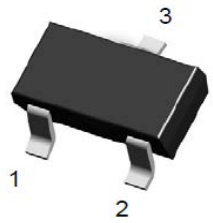
N-Channel Enhancement-Mode MOSFET (30V, 5.8A)

PRODUCT SUMMARY

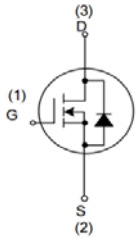
V_{DSS}	I_D	$R_{DS(on)}$ (mΩ)Typ.
30V	5.8A	25 @ VGS = 10 V,ID=5.8A
		36@ VGS = 4.5V,ID=4.0A

Features

- Super high dense cell trench design for low RDS(on)
- Rugged and reliable
- SOT-23-3L package
- Lead（Pb）-free and halogen-free



EV3404 Pin Assignment & Symbol
3-Lead Plastic SOT-23-3L
Pin 1: Gate Pin 2: Source Pin3: Drain



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)	5.8	A
I_{DM}	Drain Current (Pulsed) [a]	20	A
P_D	Total Power Dissipation @T_A=25°C	1.4	W
T_j, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	°C
R_{QJA}	Thermal Resistance Junction to Ambient (PCB mounted)[b]	89	°C/W

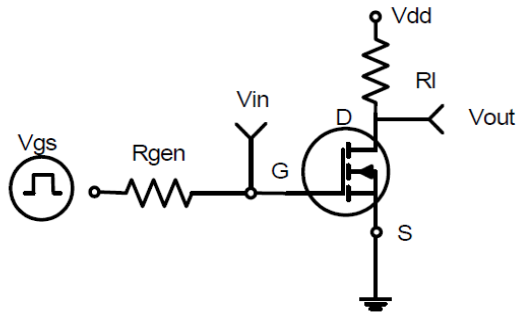
a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

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

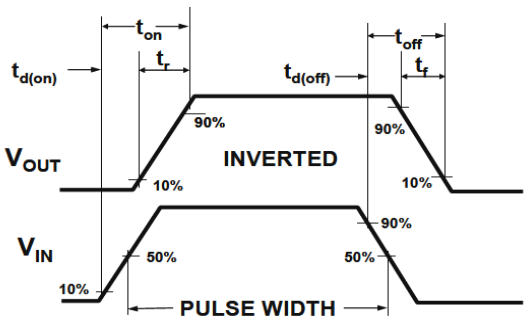
Electrical Characteristics (T_A=25°C, unless otherwise noted)

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	1.6	2	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=5A	-	25	31	mΩ
		V_{GS}=4.5V, I_D=4A		36	42	
• Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	-	255	-	PF
C_{oss}	Output Capacitance		-	45	-	
C_{rss}	Reverse Transfer Capacitance		-	35	-	
• Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=15V, I_D=5A, V_{GS}=10V	-	5.2	-	nC
Q_{gs}	Gate-Source Charge		-	0.9	-	
Q_{gd}	Gate-Drain Charge		-	1.4	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=15V, R_L=3Ω, I_D=1A, VGEN=4.5V, RG=3Ω	-	5	-	nS
t_r	Turn-on Rise Time		-	3	-	
$t_{d(off)}$	Turn-off Delay Time		-	16	-	
t_f	Turn-off Fall Time		-	4	-	
• Drain-Source Diode Characteristics						
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=-1A	-	-	-1	V

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



Switching Test Circuit



Switching Waveforms

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

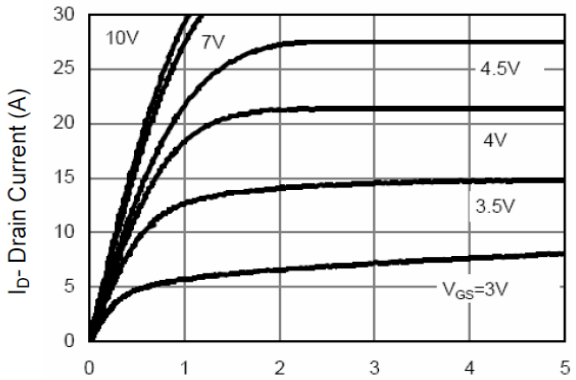


Figure 1 Output Characteristics

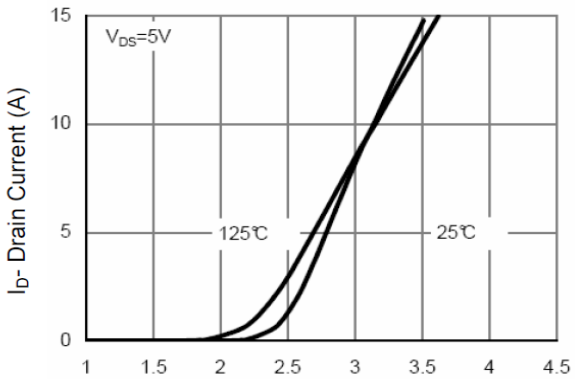


Figure 2 Transfer Characteristics

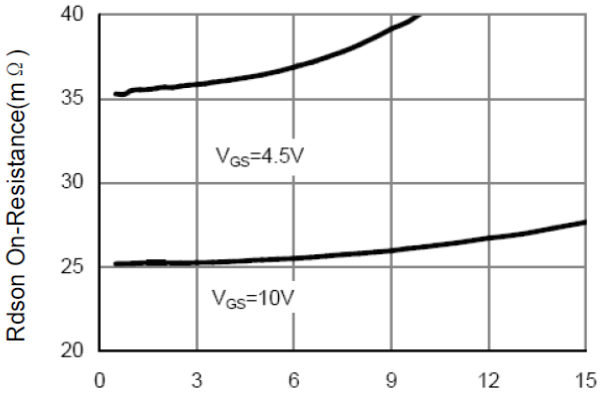


Figure 3 Drain-Source On-Resistance

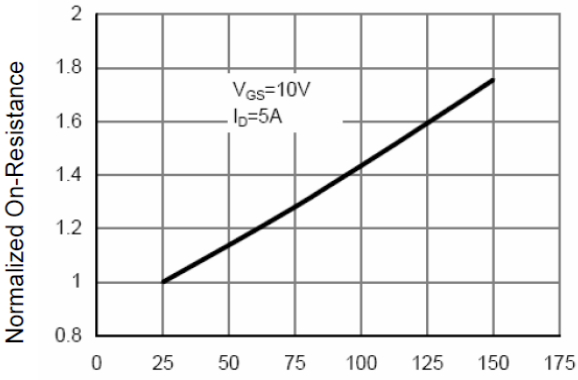


Figure 4 Drain-Source On-Resistance

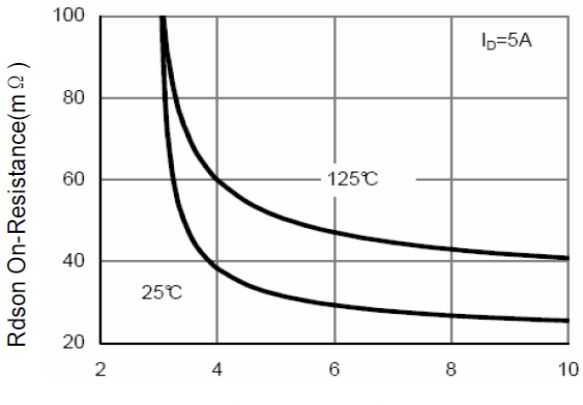


Figure 5 Rdson vs Vgs

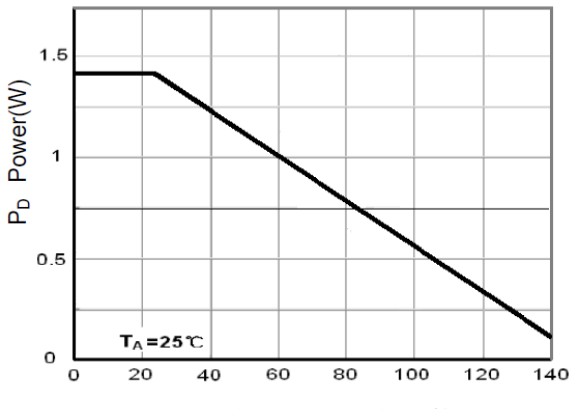


Figure 6 Power Dissipation

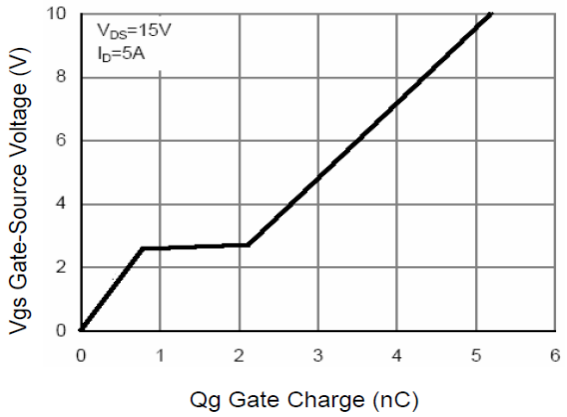


Figure7 Gate Charge

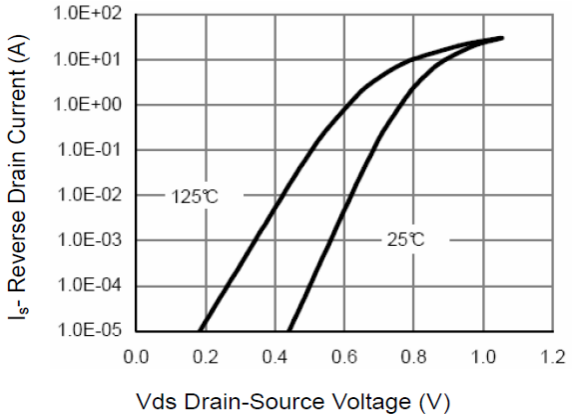


Figure 8 Source- Drain Diode Forward

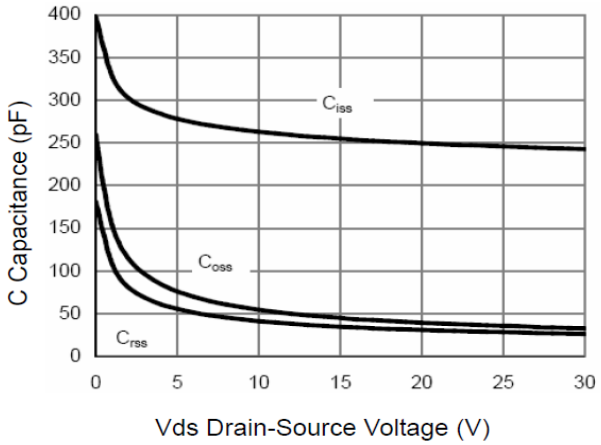


Figure 9 Capacitance vs Vds

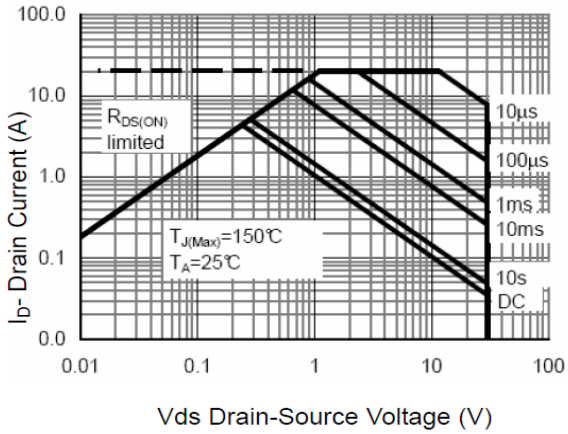


Figure 10 Safe Operation Area

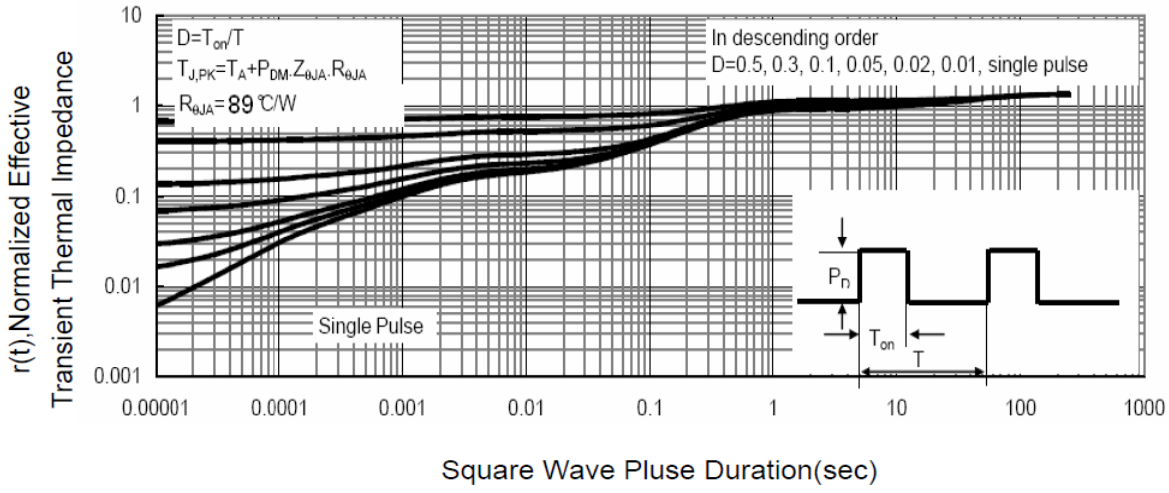
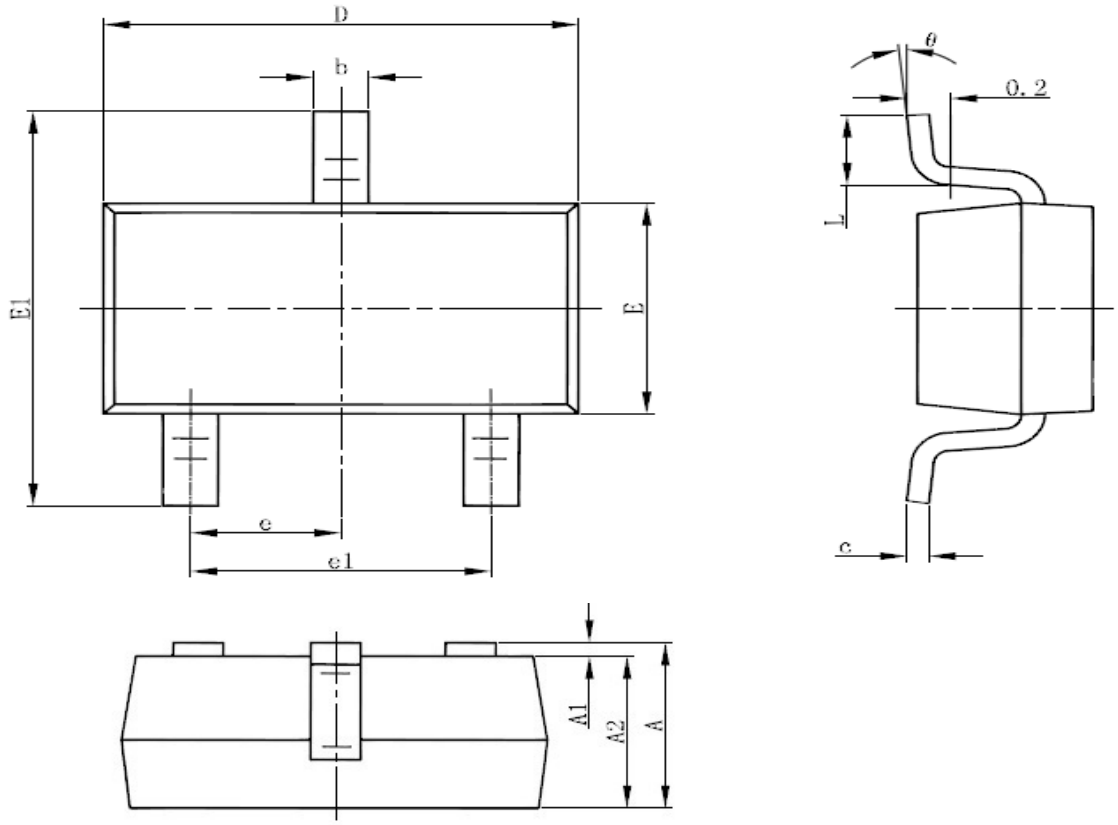


Figure 11 Normalized Maximum Transient Thermal Impedance

SOT23-3L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.850	1.250	0.033	0.049
A1	0.000	0.100	0.000	0.004
A2	0.7	1.150	0.028	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°