

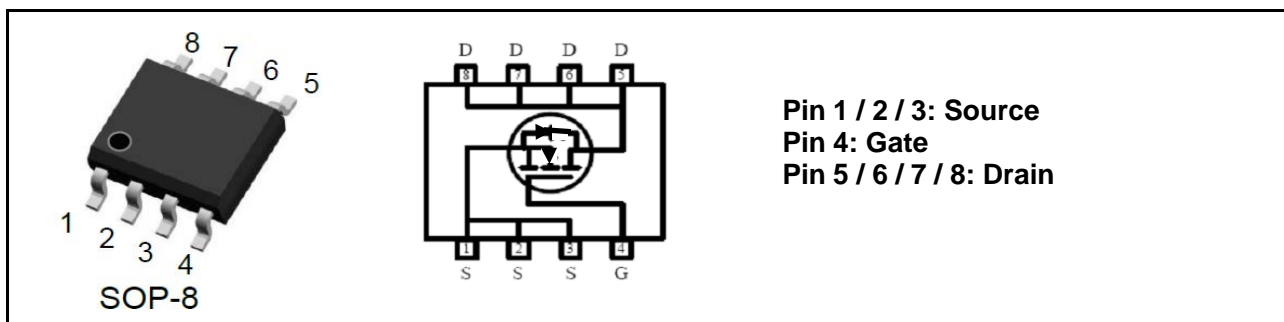
N-Channel Enhancement-Mode MOSFET (30V, 10A)

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(on)}$ (m Ω) Typ.
30V	10A	9 @ $V_{GS} = 10V, I_D=6.9A$
		13 @ $V_{GS} = 4.5V, I_D=5.8A$

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



Absolute Maximum Ratings ($T_A=25^\circ C$, 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) @ $T_A=25^\circ C$	10	A
	Drain Current (Continuous) @ $T_A=75^\circ C$	8	A
I_{DM}	Drain Current (Pulsed) ^a	50	A
P_D	Total Power Dissipation @ $T_A=25^\circ C$	2.5	W
	Total Power Dissipation @ $T_A=75^\circ C$	1.3	W
I_S	Maximum Diode Forward Current	1.7	A
T_j, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ C$
R_{QJA}	Thermal Resistance Junction to Ambient (PCB mounted) ^b	50	$^\circ C/W$

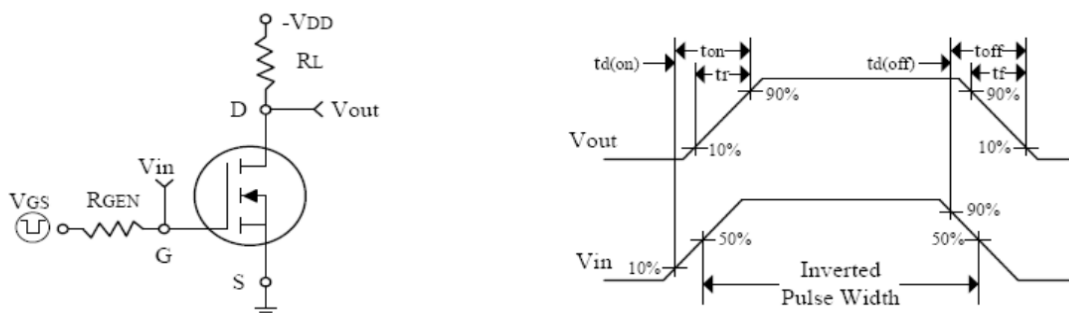
a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

b: 1-in² 2oz Cu PCB board

Electrical Characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	33	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
• On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.7	2.2	V
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=10A$	-	9	12	m Ω
		$V_{GS}=4.5V, I_D=5.8A$	-	13	15	
• Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	-	710	-	PF
C_{oss}	Output Capacitance		-	155	-	
C_{rss}	Reverse Transfer Capacitance		-	145	-	
• Switching Characteristics						
Q_g	Total Gate Charge	$V_{DS}=15V, I_D=9A, V_{GS}=4.5V$	-	8	-	nC
Q_{gs}	Gate-Source Charge		-	3.3	-	
Q_{gd}	Gate-Drain Charge		-	2.7	-	
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=15V, R_L=15\Omega, I_D=1A, V_{GEN}=10V, R_G=6\Omega$	-	7	-	nS
t_r	Turn-on Rise Time		-	7	-	
$t_{d(off)}$	Turn-off Delay Time		-	22	-	
t_f	Turn-off Fall Time		-	7	-	
• Drain-Source Diode Characteristics						
V_{SD}	Drain-Source Diode Forward	$V_{GS}=0V, I_S=2.0A$	-	-	1.2	V

Note: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$



Switching Test Circuit and Switching Waveforms

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

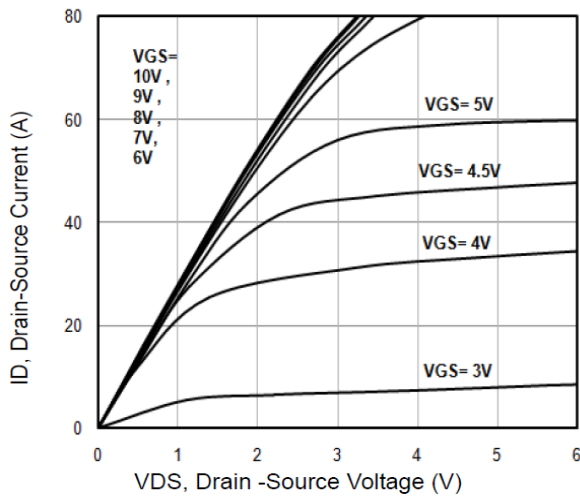


Fig1. Typical Output Characteristics

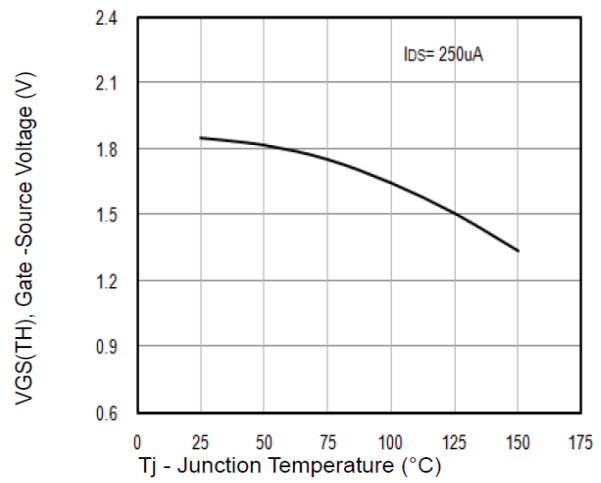


Fig2. $V_{GS(TH)}$ Gate-Source Voltage Vs. T_j

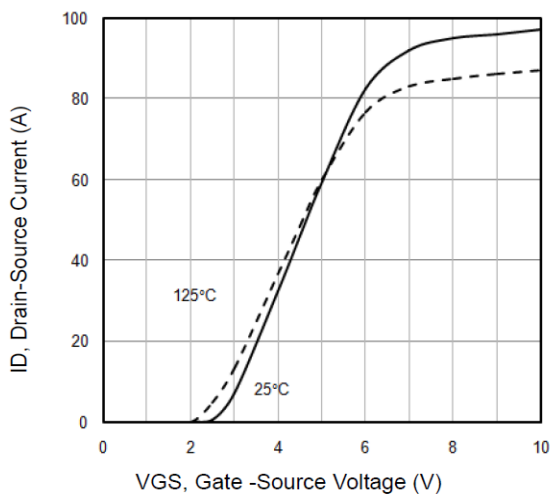


Fig3. Typical Transfer Characteristics

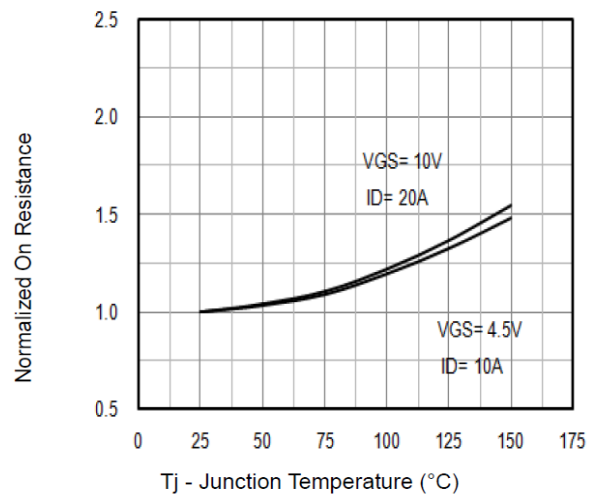


Fig4. Normalized On-Resistance Vs. T_j

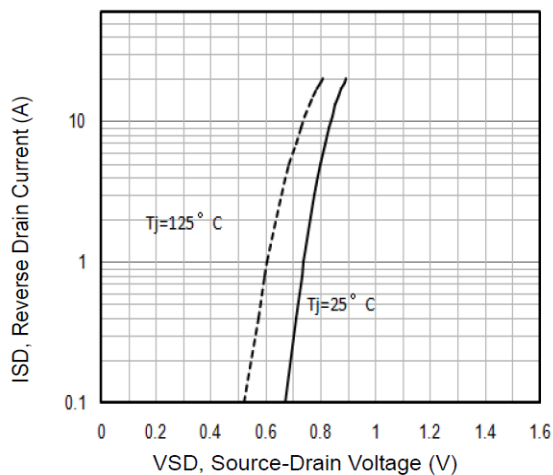


Fig5. Typical Source-Drain Diode Forward Voltage

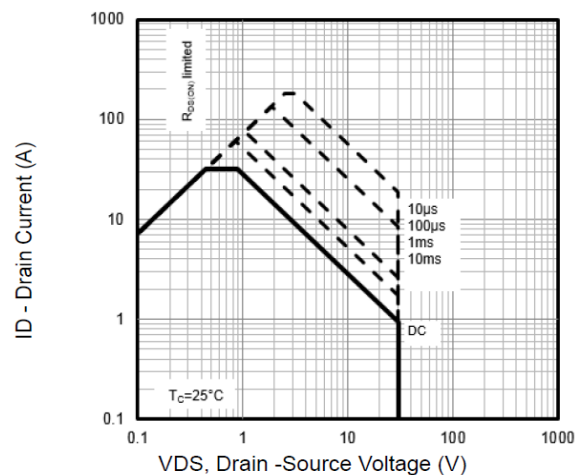


Fig6. Maximum Safe Operating Area

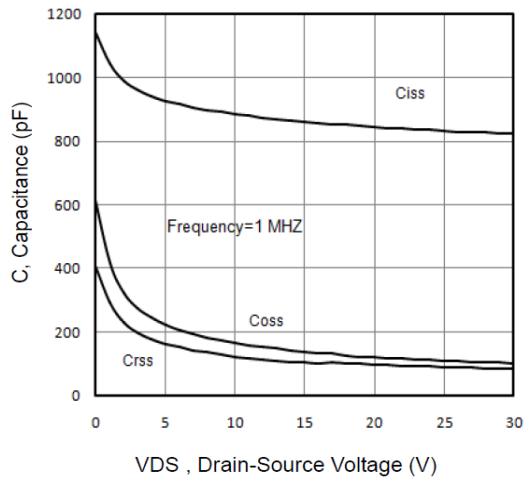


Fig7. Typical Capacitance Vs. Drain-Source Voltage

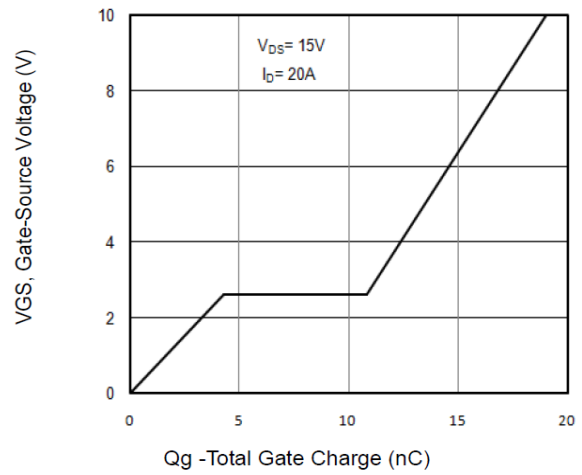


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

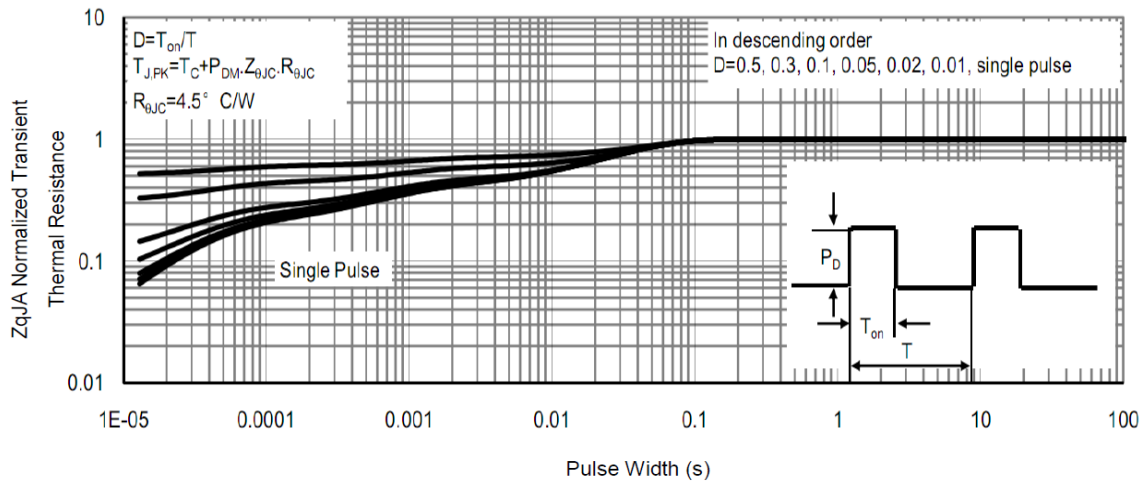
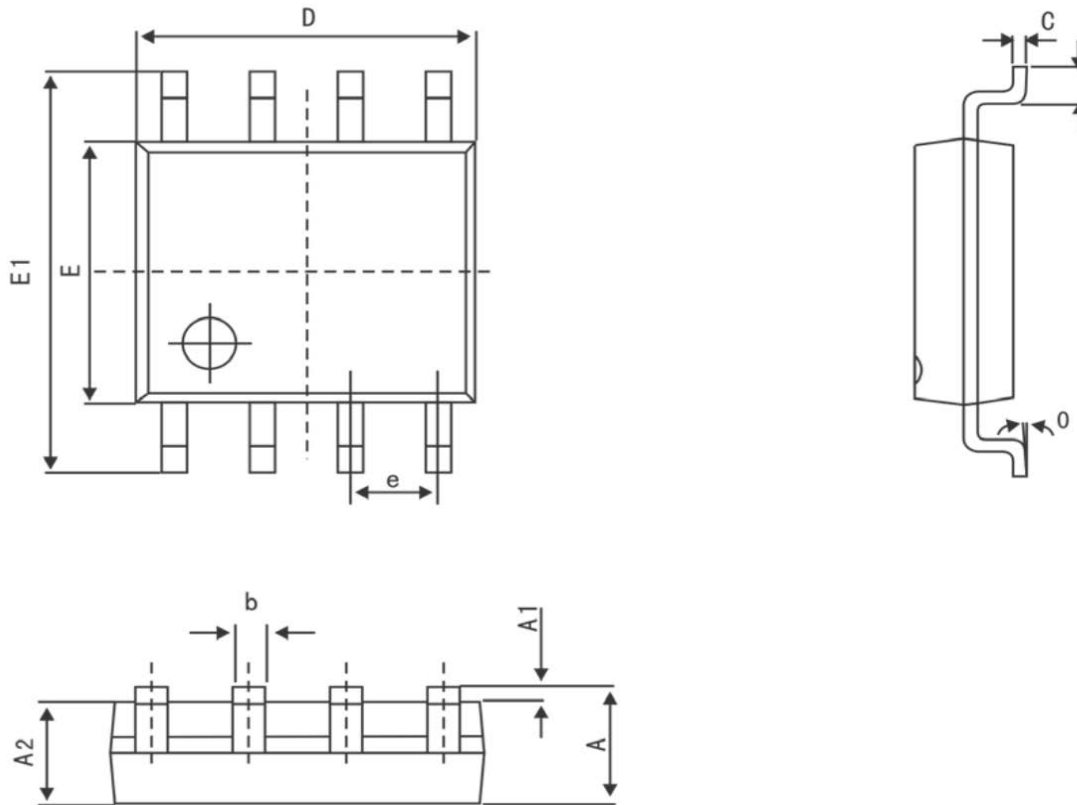


Fig9. Normalized Maximum Transient Thermal Impedance

ET4410 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters (MM)		Dimensions In Inches (MIL)	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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