Eternal Semiconductor Inc.

ET6480

N-Channel High Density Trench MOSFET (40V, 100A)

PRODUCT SUMMARY

V_{DSS}	I_D(A)	$R_{DS(on)}$ (mΩ) Typ.
40V	100	2.5 @ VGS = 10V, ID=40A

Features

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

Applications

- Load Switch
- LIThium battery protect board
- Motor drive for electric tools

TOP Marking

ET6480
XXXXXX

XXXXXX:D/C

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current (Continuous)@TA=25°C	100	A
	Drain Current (Continuous)@TA=75°C	80	A
I_{DM}	Drain Current (Pulsed) [a]	350	A
P_D	Total Power Dissipation @T_c=25°C	58	W
	Total Power Dissipation @T_c=75°C	34	W
EAS	Avalanche energy，single pulsed[b]	325	mj
I_S	Maximum Diode Forward Current	100	A
T_j, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	°C
R_{QJA}	Thermal Resistance Junction to Ambient (PCB mounted)[c]	42	°C/W

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

b: Limited by TJmax, starting TJ = 25°C, L = 0.5mH,RG = 25Ω, IAS = 85A, VGS =10V. Part not recommended for use above this value

c: 1-in2 2oz Cu PCB board

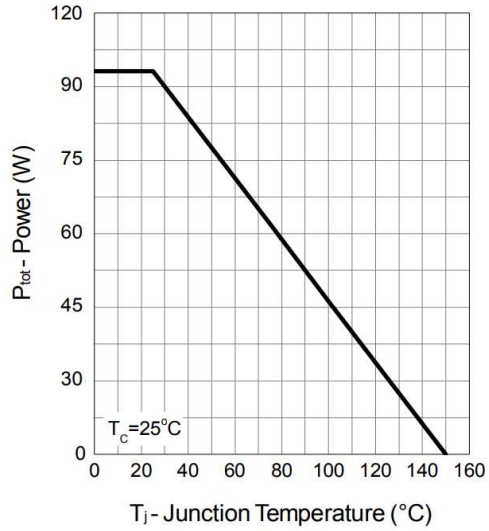
Electrical Characteristics (T_A=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V, 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	1.2	1.9	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=40A	-	2.5	2.9	mΩ
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=40A	-	3.3	4	mΩ
• Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=20V, V_{GS}=0V, f=1MHz	-	3400	-	PF
C_{oss}	Output Capacitance		-	700	-	
C_{rss}	Reverse Transfer Capacitance		-	200	-	
• Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=30V, I_D=20A, V_{GS}=10V	-	45	100	nC
Q_{gs}	Gate-Source Charge		-	21	40	
Q_{gd}	Gate-Drain Charge		-	5	20	
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=30V, R_L=30Ω, I_D=1A, V_{GEN}=10V, RG=6Ω	-	13	26	nS
t_r	Turn-on Rise Time		-	55	65	
$t_{d(off)}$	Turn-off Delay Time		-	80	96	
t_f	Turn-off Fall Time		-	80	99	
• Drain-Source Diode Characteristics						
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=20A	-	0.8	1.3	V

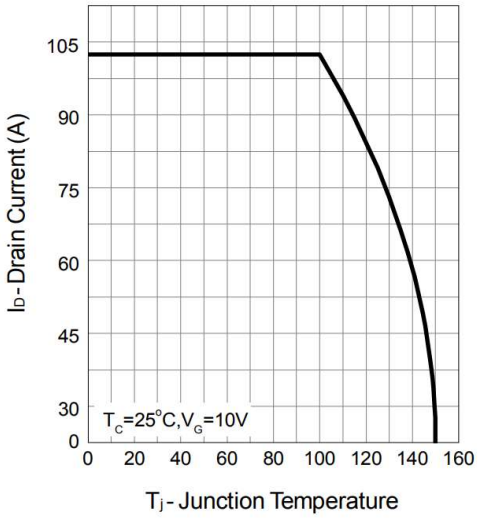
Note: Pulse Test: Pulse Width≤300us, Duty Cycle≤2%

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

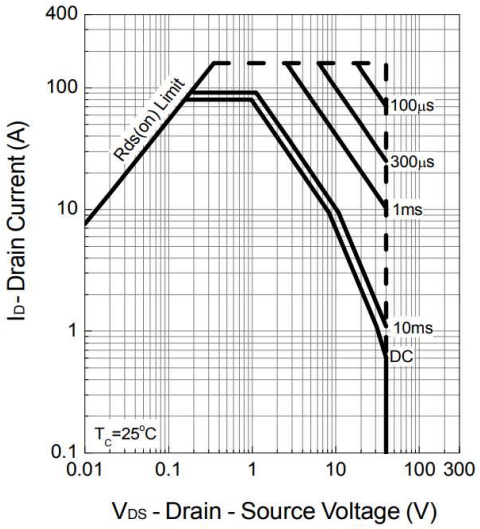
Power Dissipation



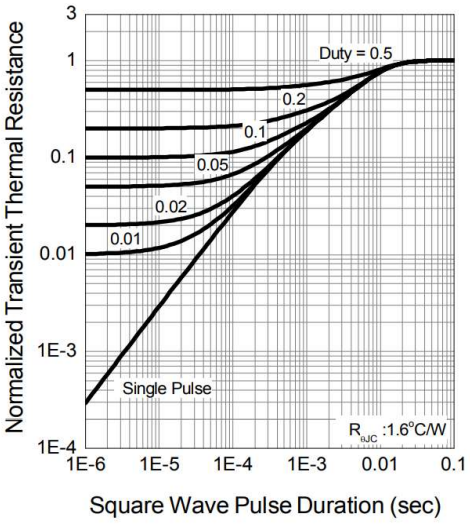
Drain Current



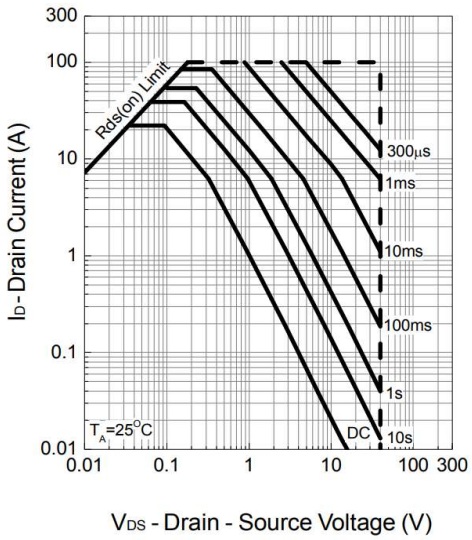
Safe Operation Area



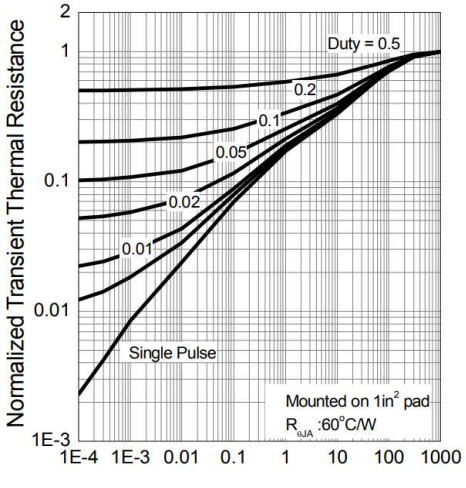
Thermal Transient Impedance



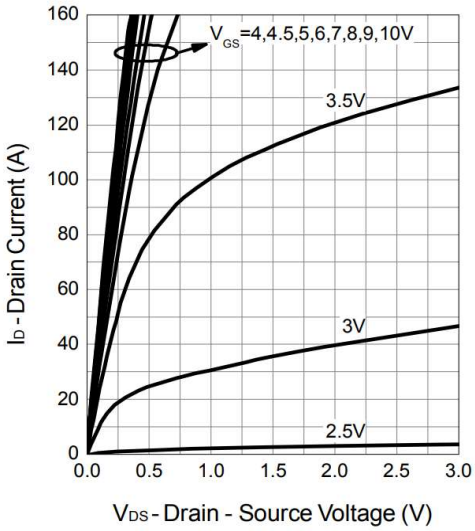
Safe Operation Area



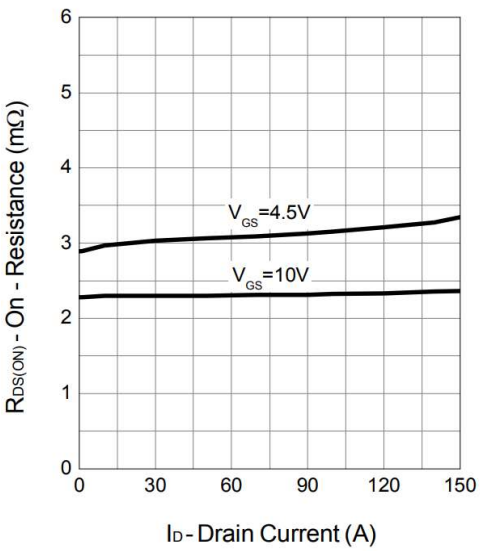
Thermal Transient Impedance



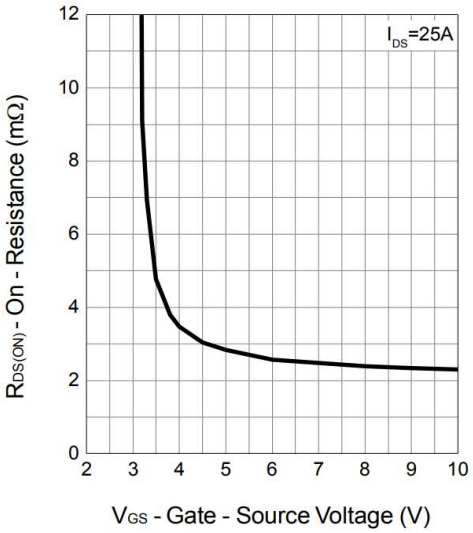
Output Characteristics



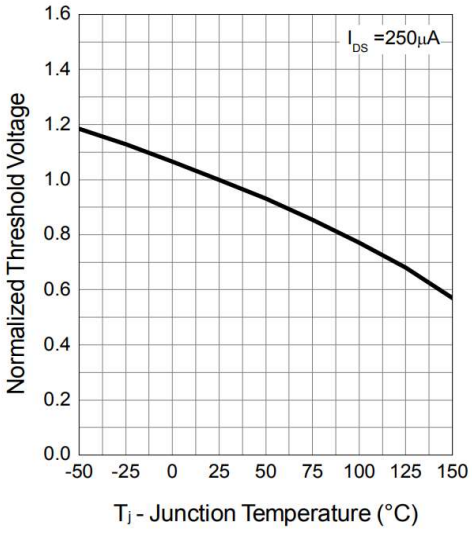
Drain-Source On Resistance



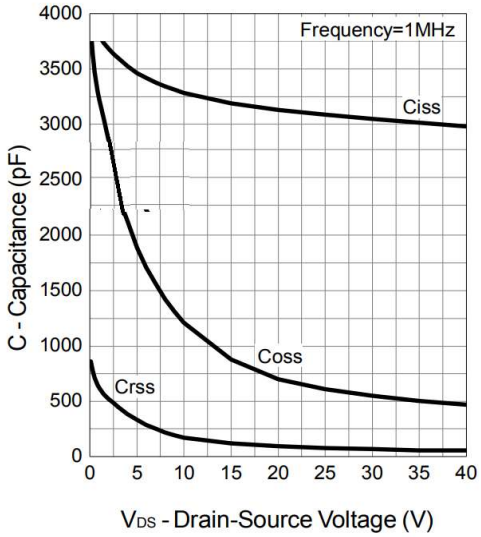
Gate-Source On Resistance



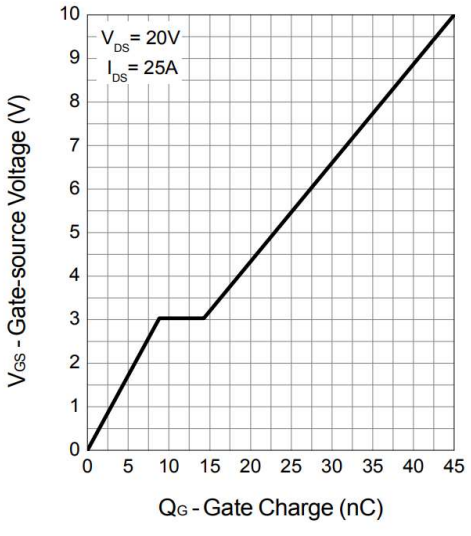
Gate Threshold Voltage



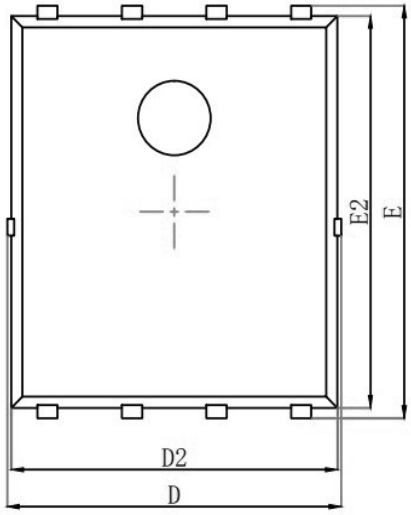
Capacitance



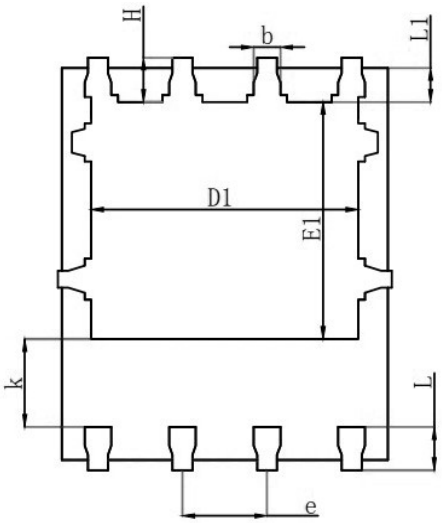
Gate Charge



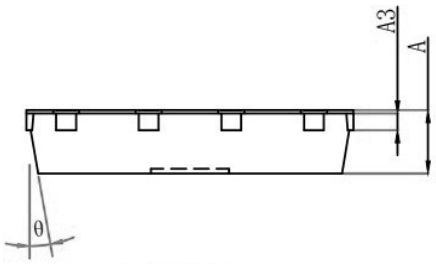
PDFN5*6 EP1 Package Outline Data



Top View



Bottom View



Side View

Symbol	Dimensions （unit： mm)		
	Min	TYP	Max
A	0.90		1.0
A3	0.254REF		
D	4.94	5.00	5.1
E	5.97	6.00	6.1
D1	3.91	4.00	4.1
E1	3.37	3.50	3.6
D2	4.82	4.90	5
E2	5.67	5.70	5.8
k	1.19	1.30	1.4
b	0.35	0.35	0.45
e	1.27TYP		
L	0.56	0.65	0.71
L1	0.52	0.55	0.58
H	0.57	0.60	0.73
θ	10^{O}	11^{O}	12^{O}