TM08P04S

P-Channel Enhancement Mosfet

General Description

- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

Applications

- Load switch
- PWM

General Features

V_{DS} = -40V I_D =-7.8A

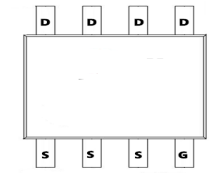
$R_{DS(ON)}$ =32 mΩ @ V_{GS}=-10V

100% UIS Tested

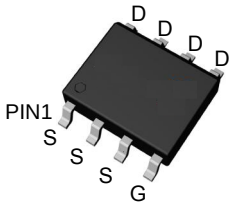
100% R_g Tested

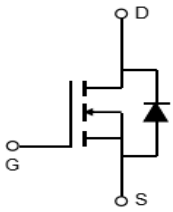
Green Product

S:SOP-8L



PIN1





Marking: 08P04

Absolute Maximum Ratings (T_A= 25°C Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25°C	Continuous Drain Current, V_{GS} @ 10V[1]	-7.8	A
I_D@T_A=70°C	Continuous Drain Current, V_{GS} @ 10V[1]	-5.7	A
I_{DM}	Pulsed Drain Current[2]	-30	A
EAS	Single Pulse Avalanche Energy[3]	36	mJ
P_D@T_A=25°C	Total Power Dissipation[4]	3.1	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	80	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	25	°C/W

Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	-40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=-32V, TJ=25℃	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	-1.0	-1.7	-2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance[2]	V_{GS}=-10V,I_D=-6A	---	32	41	mΩ
		V_{GS}=-4.5V,I_D=-3A	---	42	58	
G_{FS}	Forward Transconductance	V_{DS}=-5V, I_D=-6A	---	12	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1MHz	---	1004	---	pF
C_{oss}	Output Capacitance		---	108	---	
C_{rss}	Reverse Transfer Capacitance		---	80	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time[2,3]	V_{DS}=-15V, V_{GS}=-10V I_D=-1A,R_{GEN}=3.3Ω	---	19.2	---	ns
t_r	Rise Time[2,3]		---	12.8	---	ns
$t_{d(off)}$	Turn-Off Delay Time[2,3]		---	48.6	---	ns
t_f	Fall Time[2,3]		---	4.6	---	ns
Q_g	Total Gate Charge[2,3]	V_{DS}=-20V , V_{GS}=-4.5V , I_D=-6A	---	9	---	nC
Q_{gs}	Gate-Source Charge[2,3]		---	2.54	---	nC
Q_{gd}	Gate-Drain “Miller” Charge[2,3]		---	3.1	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage[2]	V_{GS}=0V,I_S=-1A, T_J=25℃	---	---	-1	V
LS	Continuous Source Current1, 5	·V_G=V_D=0V , Force Current	---	---	-7.8	
LSM	Pulsed Source Current2, 5		---	---	-15	

Notes: 1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Characteristics: (T_C=25℃ unless otherwise noted)

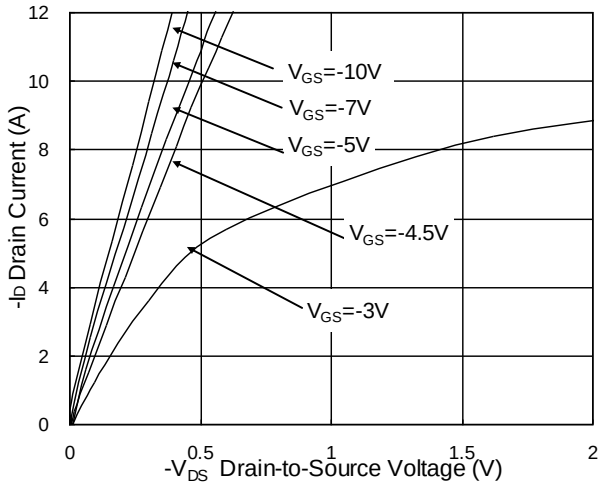


Fig.1 Typical Output Characteristics

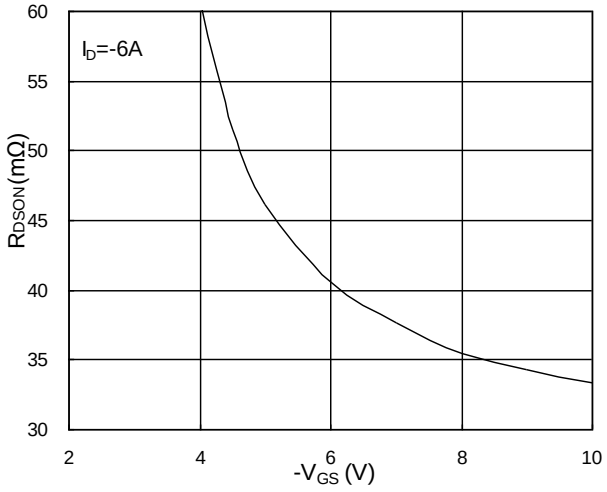


Fig.2 On-Resistance v.s Gate-Source

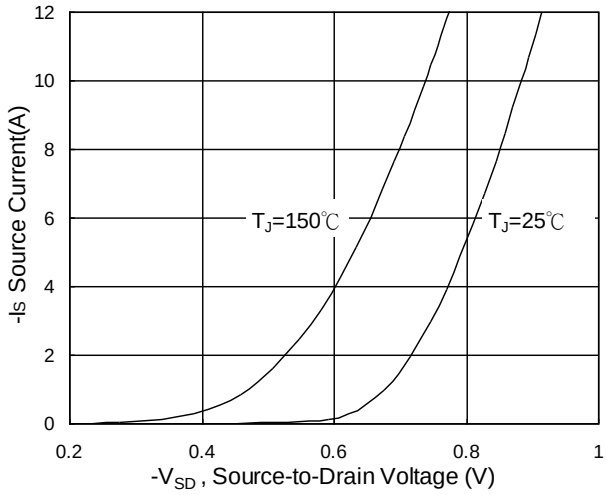


Fig.3 Forward Characteristics of Reverse

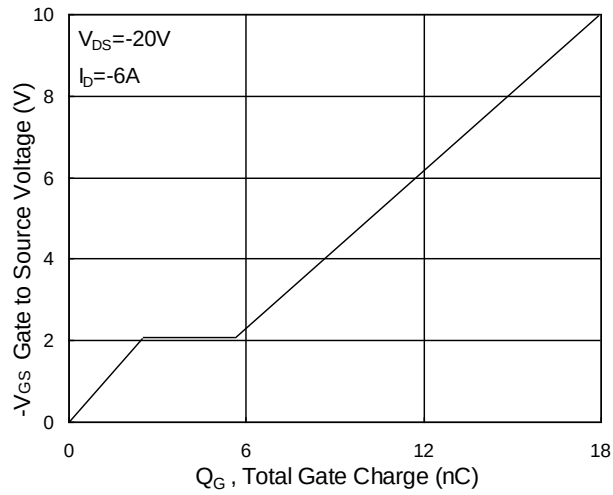


Fig.4 Gate-Charge Characteristics

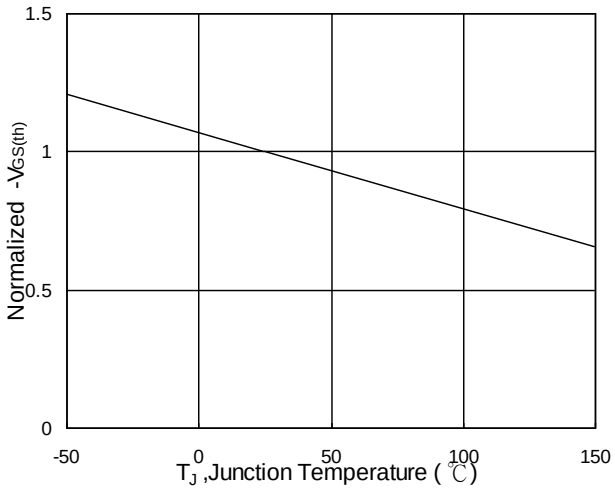


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

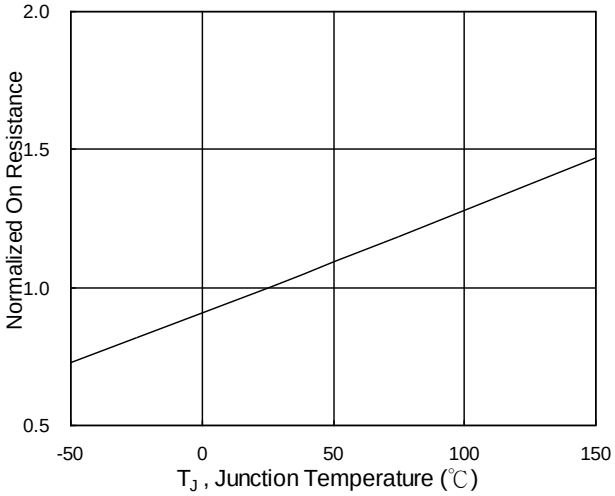


Fig.6 Normalized R_{DSON} v.s T_J

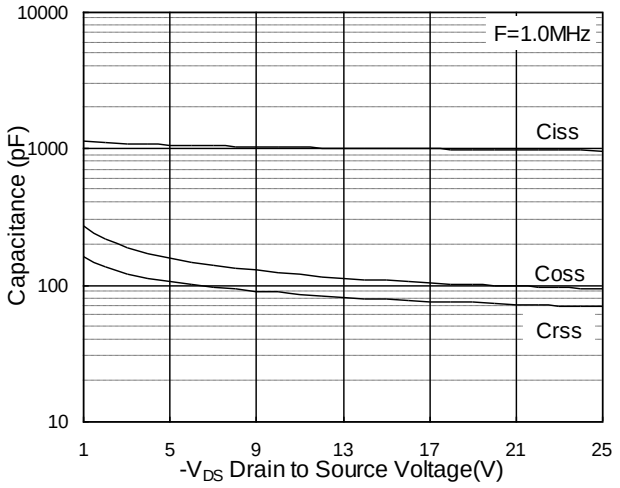


Fig.7 Capacitance

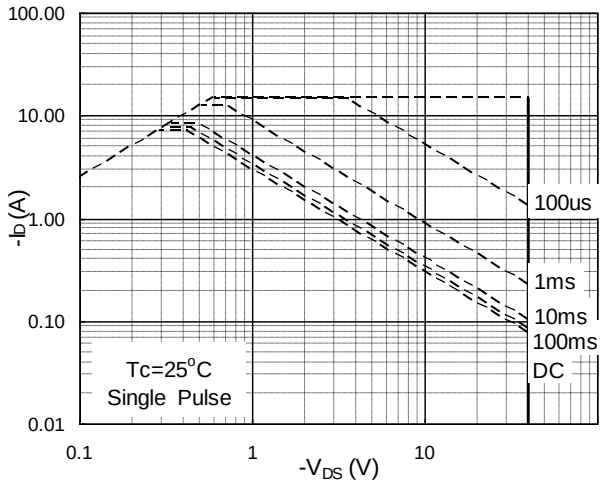


Fig.8 Safe Operating Area

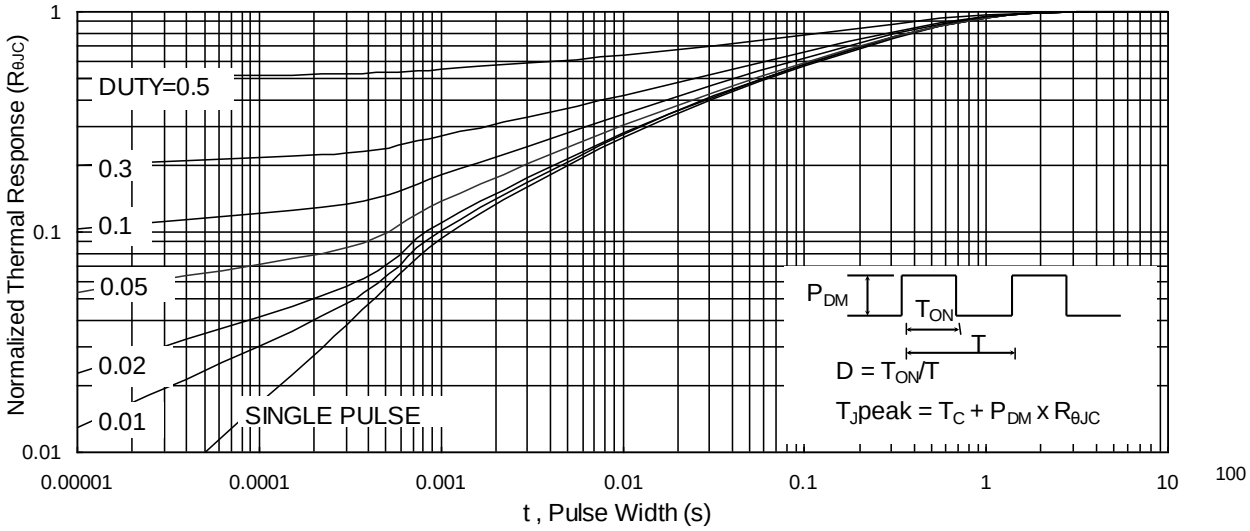


Fig.9 Normalized Maximum Transient Thermal Impedance

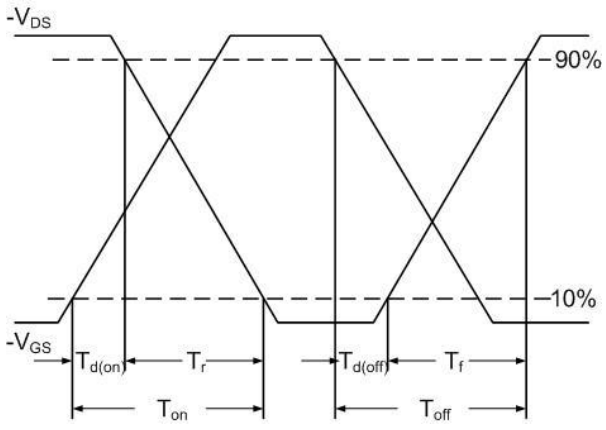


Fig.10 Switching Time Waveform

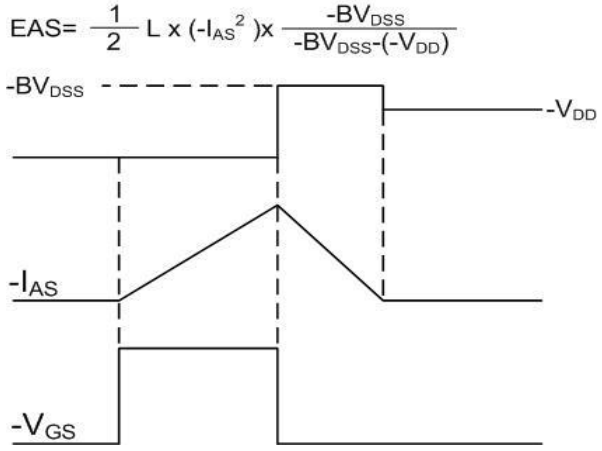
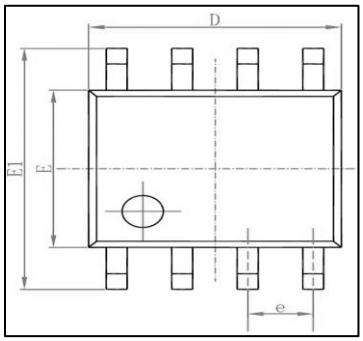
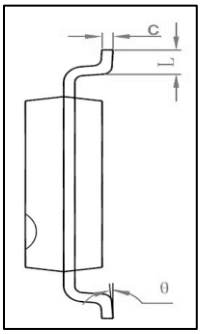
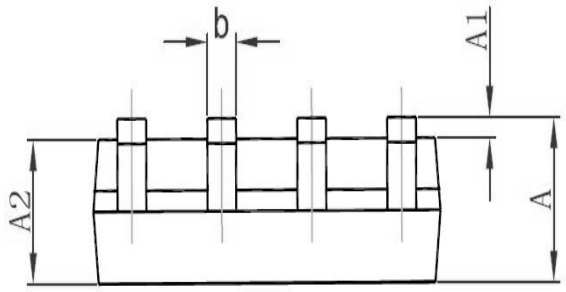


Fig.11 Unclamped Inductive Waveform

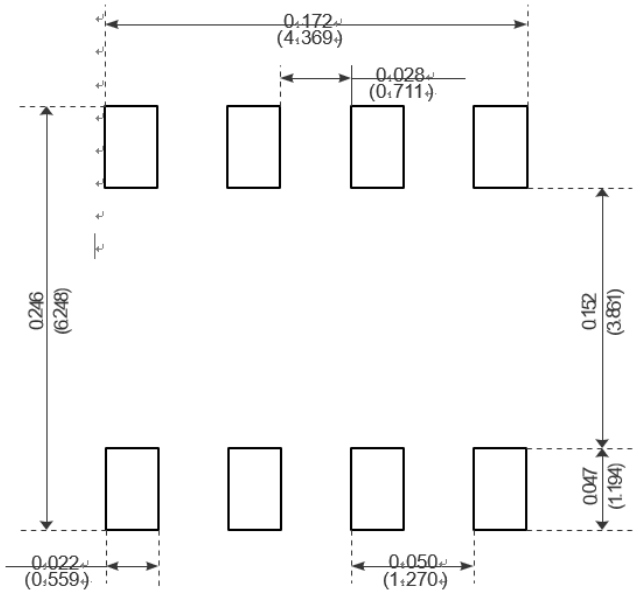
Package Mechanical Data:SOP-8L







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	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	0.006	0.010
D	4.700	5.100	0.185	0.200
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°



Recommended Minimum Pads