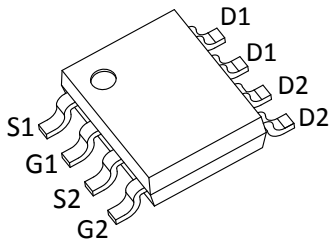
Features

- Fast switching
- Green Device Available
- Suit for 4.5V Gate Drive Applications

Dual SOP-8

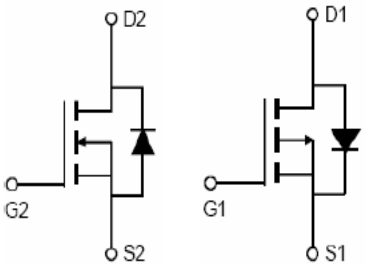
RoHS COMPLIANT



Applications

- DC Fan
- Motor Drive Applications
- Networking
- Half / Full Bridge Topology

Equivalent Circuit



Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating		Units
V_{DS}	Drain-Source Voltage	30	-30	V
V_{GS}	Gate-Source Voltage	±20	±20	V
I_D	Drain Current – Continuous (T_C=25℃)	7.0	-6.0	A
	Drain Current – Continuous (T_C=100℃)	4.5	-3.5	A
I_{DM}	Drain Current – Pulsed[1]	21	-18	A
P_D	Power Dissipation (T_C=25℃)	2.5		W
	Power Dissipation – Derate above 25℃	0.02		W/℃
T_{STG}	Storage Temperature Range	-55 to 150		℃
T_J	Operating Junction Temperature Range	-55 to 125		℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	50	℃/W

N-CH Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	30	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=24V , V_{GS}=0V , T_J=125℃	---	---	10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=6A	---	15	22	mΩ
		V_{GS}=4.5V , I_D=5A	---	21	35	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.0	1.5	2.5	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-4	---	mV/℃
gfs	Forward Transconductance	V_{DS}=10V , I_D=3A	---	3	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge[3,4]	V_{DS}=15V , V_{GS}=4.5V , I_D=8A	---	4.1	---	nC
Q_{gs}	Gate-Source Charge[3,4]		---	1	---	
Q_{gd}	Gate-Drain Charge[3,4]		---	2.1	---	
$T_{d(on)}$	Turn-On Delay Time[3,4]	V_{DD}=15V , V_{GS}=10V , R_G=6Ω I_D=1A	---	2.8	---	ns
T_r	Rise Time[3,4]		---	7.2	---	
$T_{d(off)}$	Turn-Off Delay Time[3,4]		---	15.8	---	
T_f	Fall Time[3,4]		---	4.6	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , F=1MHz	---	345	---	pF
C_{oss}	Output Capacitance		---	55	---	
C_{rss}	Reverse Transfer Capacitance		---	32	---	
Rg	Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz	---	3.2	---	Ω

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	7.0	A
I_{SM}	Pulsed Source Current		---	---	14	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.2	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=17A.,R_G=25Ω, Starting T_J=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

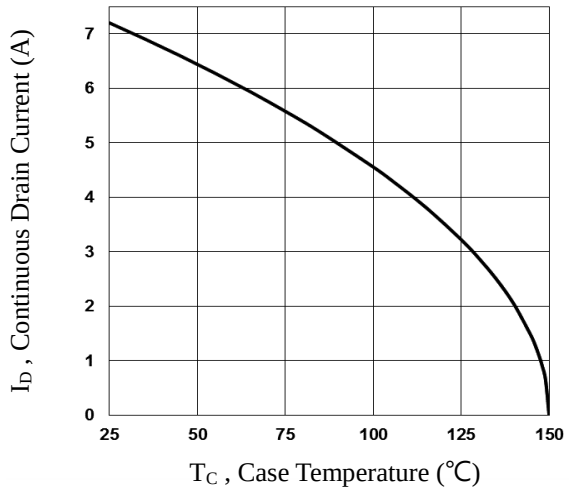


Fig.1 Continuous Drain Current vs. T_C

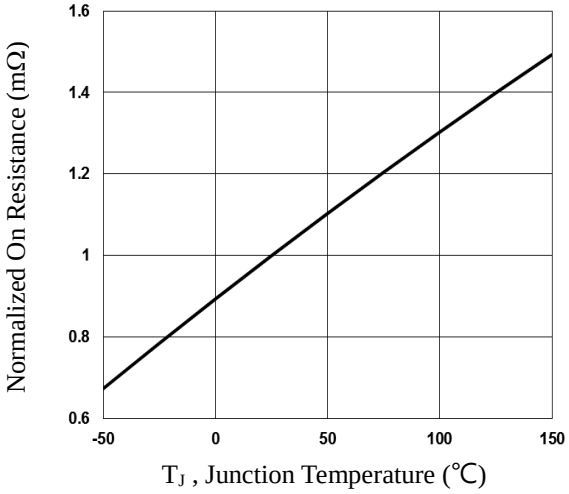


Fig.2 Normalized RDSON vs. T_J

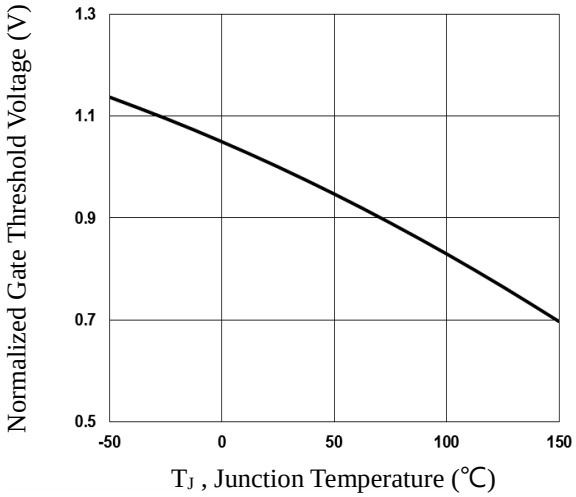


Fig.3 Normalized V_{th} vs. T_J

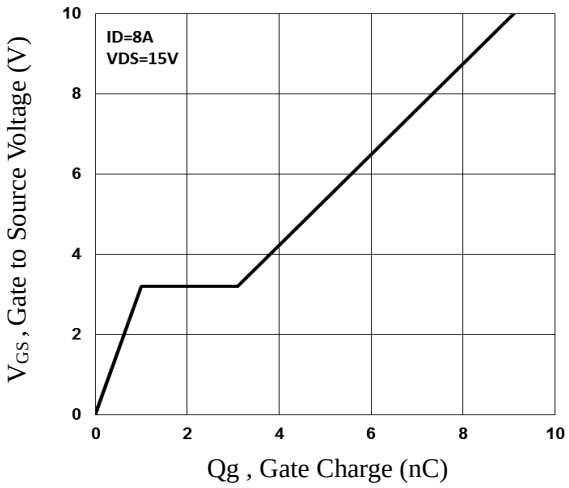


Fig.4 Gate Charge Waveform

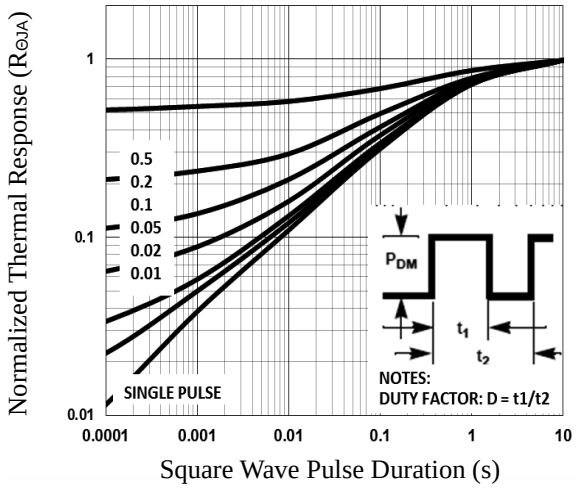


Fig.5 Normalized Transient Response

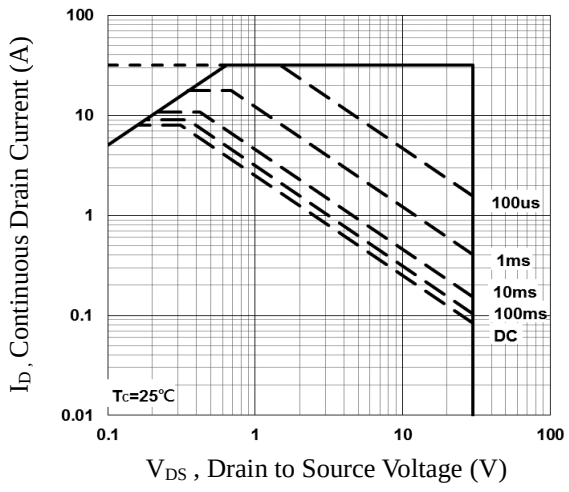


Fig.6 Maximum Safe Operation Area

P-CH Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-30	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	---	-0.03	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-30V , V_{GS}=0V , T_J=25℃	---	---	-1	uA
		V_{DS}=-24V , V_{GS}=0V , T_J=125℃	---	---	-10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V , I_D=-5A	---	45	60	mΩ
		V_{GS}=-4.5V , I_D=-3A	---	65	80	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1.0	-1.5	-2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	4	---	mV/℃
gfs	Forward Transconductance	V_{DS}=-10V , I_D=-3A	---	3.5	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge[7,8]	V_{DS}=-15V , V_{GS}=-4.5V , I_D=-3A	---	5.1	---	nC
Q_{gs}	Gate-Source Charge[7,8]		---	2	---	
Q_{gd}	Gate-Drain Charge[7,8]		---	2.2	---	
$T_{d(on)}$	Turn-On Delay Time[7,8]	V_{DD}=-15V , V_{GS}=-10V , R_G=6Ω I_D=-1A	---	3.4	---	ns
T_r	Rise Time[7,8]		---	10.8	---	
$T_{d(off)}$	Turn-Off Delay Time[7,8]		---	26.9	---	
T_f	Fall Time[7,8]		---	6.9	---	
C_{iss}	Input Capacitance	V_{DS}=-15V , V_{GS}=0V , F=1MHz	---	560	---	pF
C_{oss}	Output Capacitance		---	55	---	
C_{rss}	Reverse Transfer Capacitance		---	40	---	

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-6.0	A
I_{SM}	Pulsed Source Current		---	---	-12	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1.3	V

Note :

5. Repetitive Rating : Pulsed width limited by maximum junction temperature.
6. V_{DD}=-25V,V_{GS}=-10V,L=0.1mH,I_{AS}=-10A.,R_G=25Ω, Starting T_J=25℃
7. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
8. Essentially independent of operating temperature.

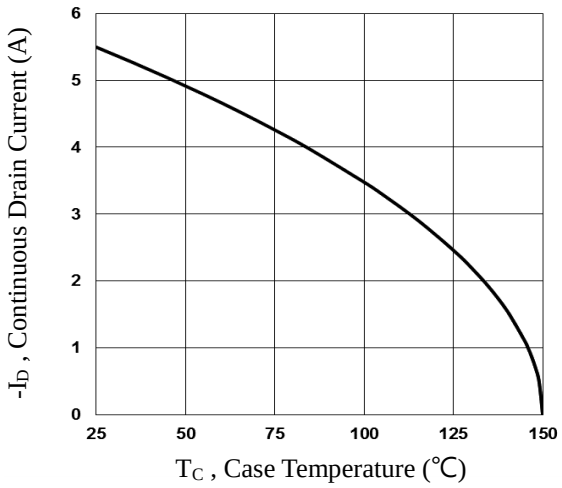


Fig.1 Continuous Drain Current vs. T_C

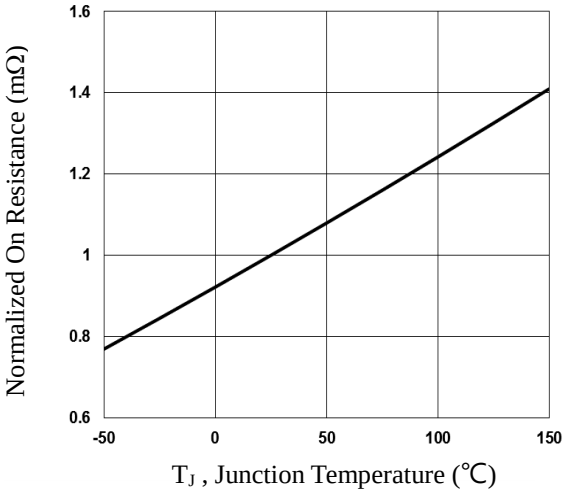


Fig.2 Normalized RDSON vs. T_J

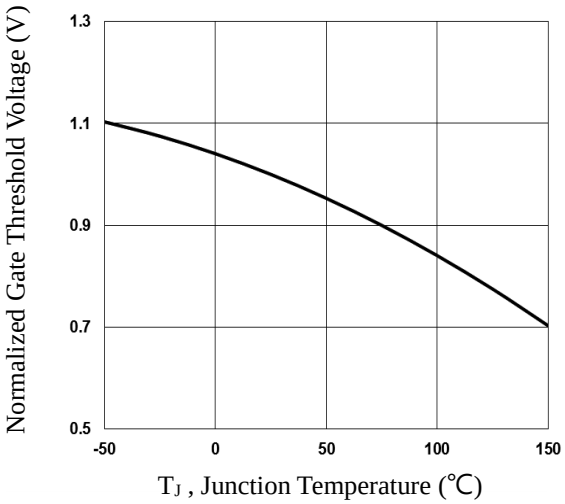


Fig.3 Normalized V_{th} vs. T_J

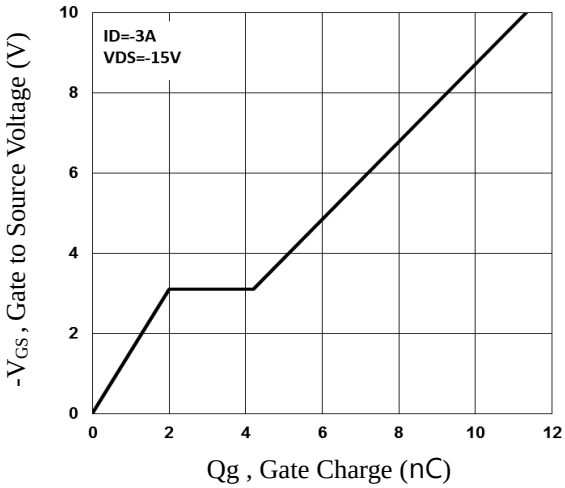


Fig.4 Gate Charge Waveform

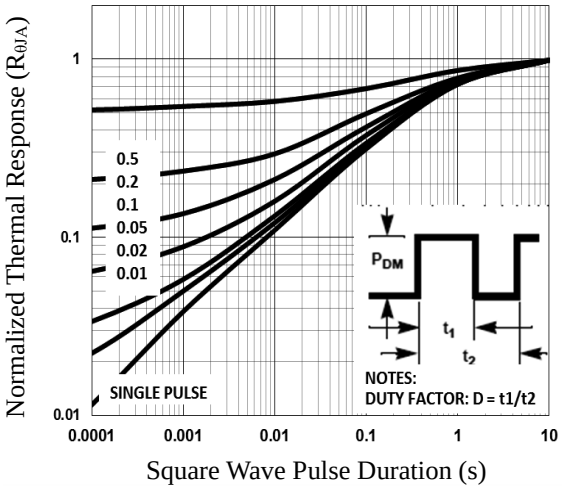


Fig.5 Normalized Transient Impedance

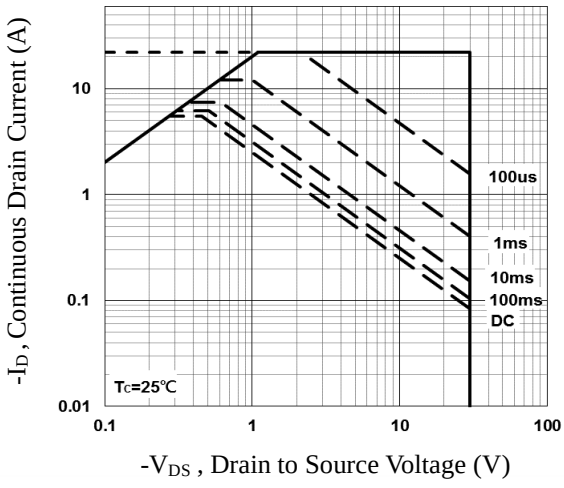
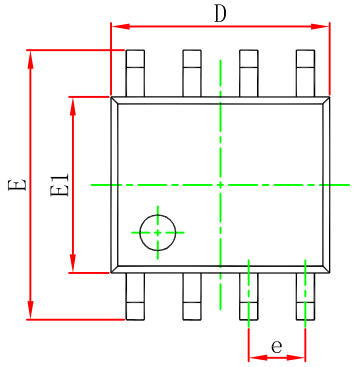
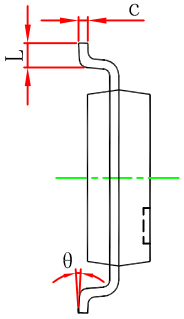
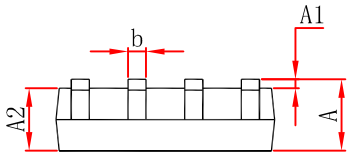


Fig.6 Maximum Safe Operation Area

SOP-8 Package Outline Dimensions

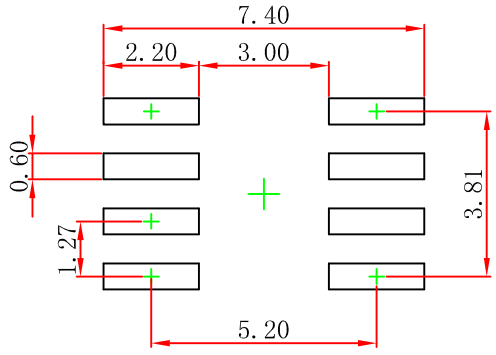






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.450	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
e	1.270（BSC）		0.050（BSC）	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

SOP-8 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.