

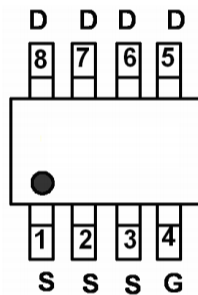
GENERAL FEATURES

$V_{(BR)DSS}$	-20V
$R_{DS(ON)}$	8.5m Ω
I_D	-14A

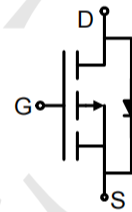
Application

- PWM Applications
- Load Switch

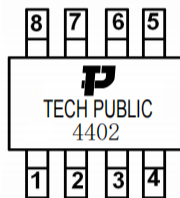
Package and Pin Configuration



Circuit diagram



Marking:



Absolute maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current – Continuous ($T_C=25^\circ\text{C}$)	I_D	-14	A
Drain Current – Continuous ($T_C=100^\circ\text{C}$)		-8.8	A
Drain Current – Pulsed ¹	I_{DM}	-56	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	2	W
Power Dissipation – Derate above 25°C		0.016	W/ $^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	---	62	$^\circ\text{C/W}$
Thermal Resistance Junction to Case	$R_{\theta JC}$	---	17	$^\circ\text{C/W}$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-20	---	---	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =-1mA	---	-0.01	---	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
		V _{DS} =-16V, V _{GS} =0V, T _J =125°C	---	---	-10	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	---	---	±100	nA
On Characteristics						
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-8A	---	6.5	8.5	mΩ
		V _{GS} =-2.5V, I _D =-5A	---	9	12	
		V _{GS} =-1.8V, I _D =-3A	---	12	17	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250uA	-0.3	-0.6	-1	V
Forward Transconductance	g _{fs}	V _{DS} =-10V, I _S =-5A	---	20	---	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2, 3}	Q _g	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-5A	---	44.4	80	nC
Gate-Source Charge ^{2, 3}	Q _{gs}		---	7.2	14	
Gate-Drain Charge ^{2, 3}	Q _{gd}		---	10.2	20	
Turn-On Delay Time ^{2, 3}	T _{d(on)}	V _{DD} =-10V, V _{GS} =-4.5V, R _G =25Ω, I _D =-1A	---	13.2	26	nS
Rise Time ^{2, 3}	T _r		---	68	120	
Turn-Off Delay Time ^{2, 3}	T _{d(off)}		---	160	320	
Fall Time ^{2, 3}	T _f		---	154	300	
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, F=1MHz	---	4060	8000	pF
Output Capacitance	C _{oss}		---	520	1000	
Reverse Transfer Capacitance	C _{rss}		---	400	800	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	---	---	-14	A
Pulsed Source Current	I _{SM}		---	---	-28	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-1A, T _J =25°C	---	---	-1	V

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

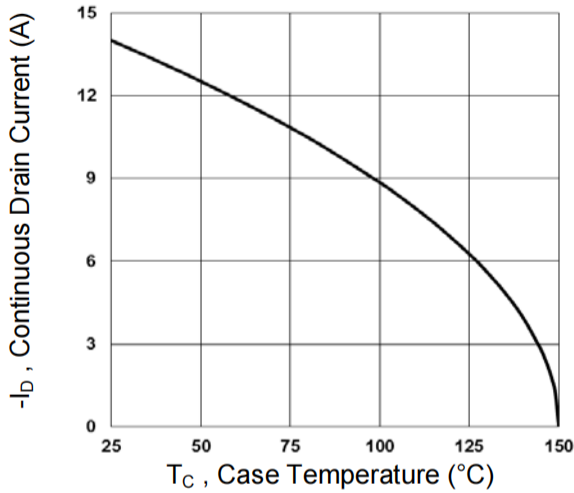


Fig.1 Continuous Drain Current vs. T_C

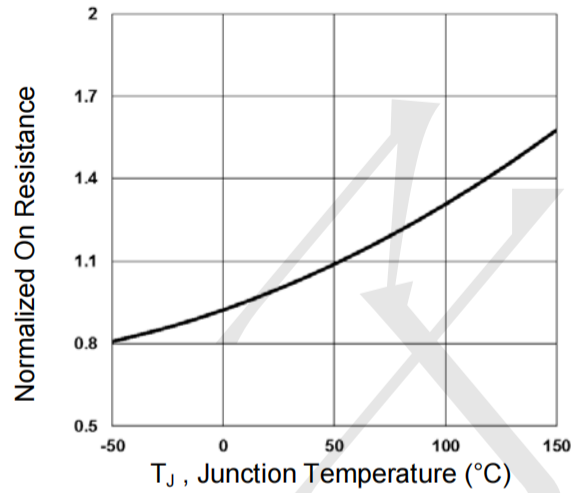


Fig.2 Normalized $R_{DS(ON)}$ vs. T_J

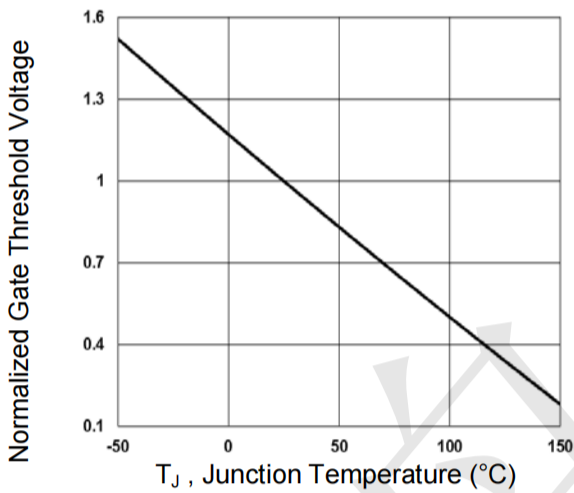


Fig.3 Normalized V_{th} vs. T_J

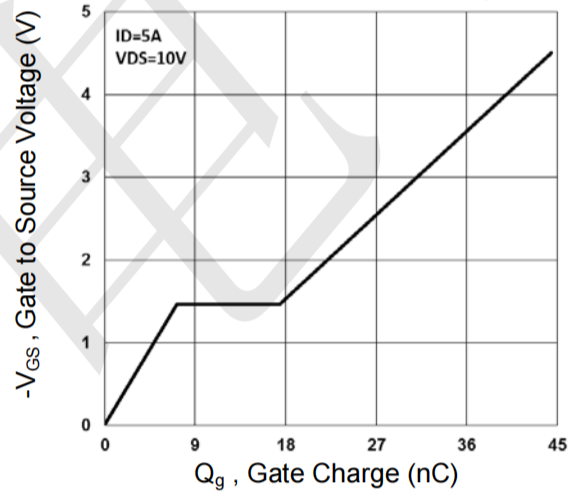


Fig.4 Gate Charge Waveform

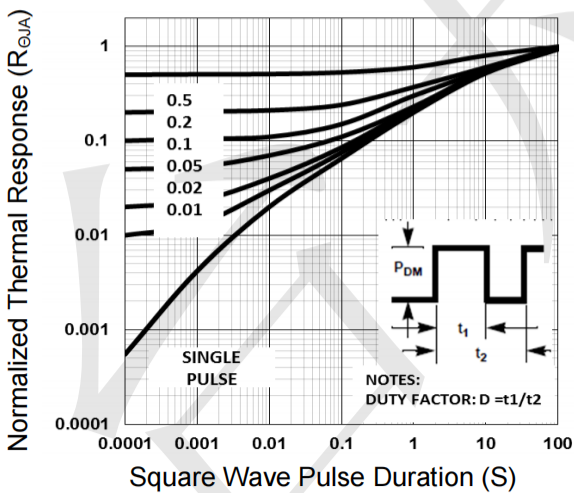


Fig.5 Normalized Transient Response

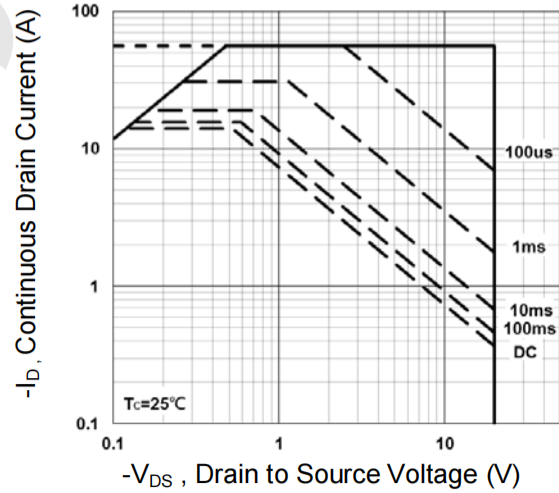


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

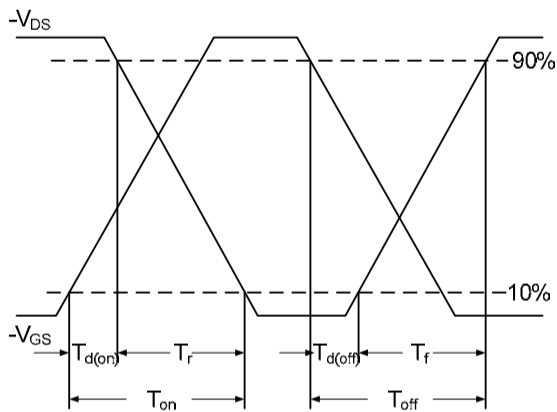


Fig.7 Switching Time Waveform

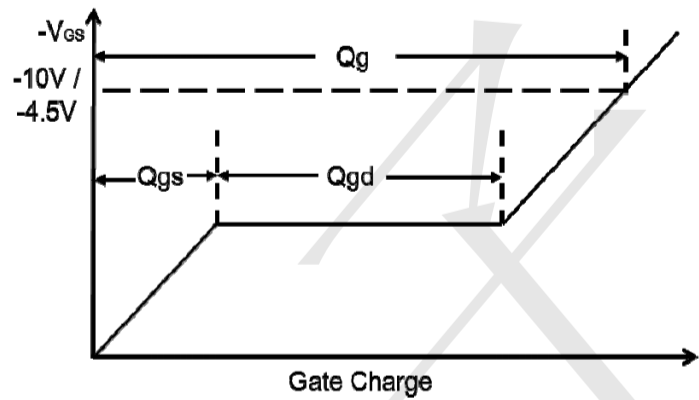
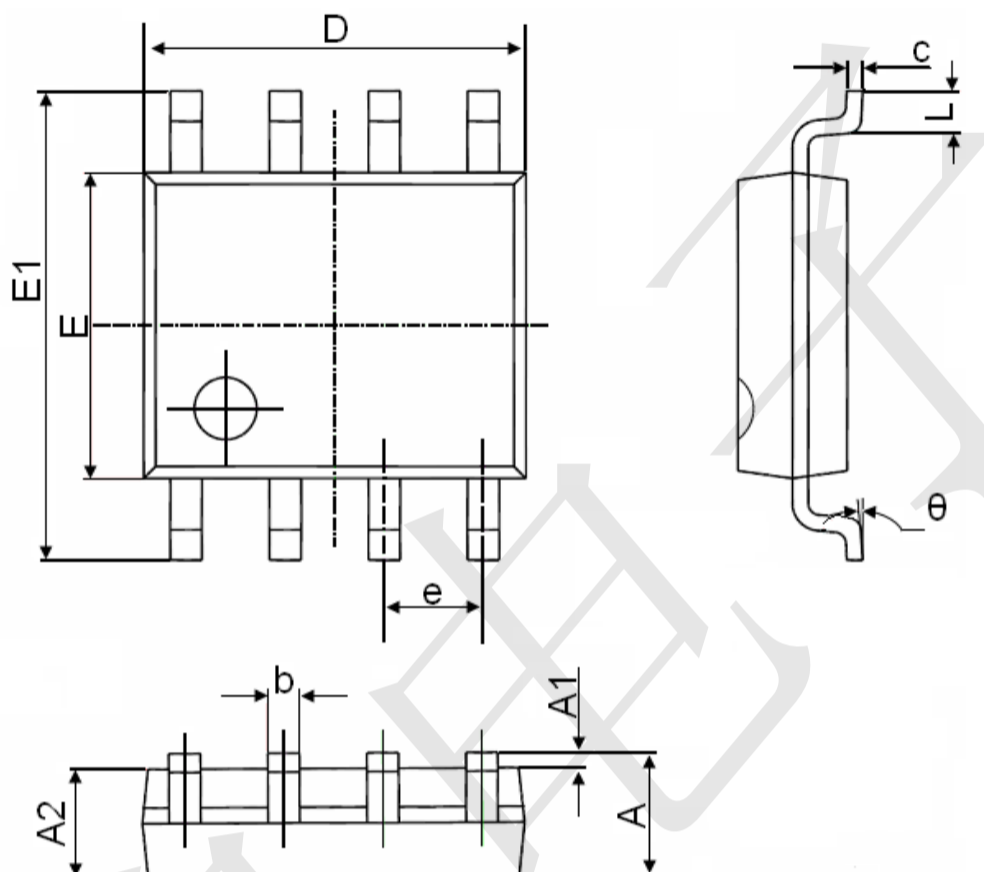


Fig.8 Gate Charge Waveform

SOP-8 Package Information



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°