

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

Product Summary



V_{DS}	-60	V
I_D	-3.3	A
$R_{DS(ON)}$ (at $V_{GS}=-10V$)	96	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	130	m Ω

Applications

- High Frequency Point-of-Load, Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



Absolute Maximum Ratings($T_A=25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	$I_D@T_A=25^{\circ}C$	-3.3	A
Continuous Drain Current ¹	$I_D@T_A=70^{\circ}C$	-2.6	A
Pulsed Drain Current ²	I_{DM}	-13.2	A
Single Pulse Avalanche Energy ³	E_{AS}	25	mJ
Total Power Dissipation ⁴	$P_D@T_A=25^{\circ}C$	2	W
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}C$
Operating Junction Temperature Range	T_J	-55 to 150	$^{\circ}C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	---	62.5	$^{\circ}C/W$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-60	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-2A$	---	80	96	$m\Omega$
		$V_{GS}=-4.5V, I_D=-1A$	---	100	130	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.0	---	-2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$	---	---	-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
Forward Transconductance	g_{fs}	$V_{DS}=-10V, I_D=-1A$	---	3	---	S
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	---	22	---	Ω
Total Gate Charge	Q_g	$V_{DS}=-30V, V_{GS}=-10V, I_D=-1A$	---	10	---	nC
Gate-Source Charge	Q_{gs}		---	1.6	---	
Gate-Drain Charge	Q_{gd}		---	3	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=-30V, V_{GS}=-10V, R_G=6\Omega, I_D=-1A$	---	8	---	ns
Rise Time	T_r		---	15	---	
Turn-Off Delay Time	$T_{d(off)}$		---	42	---	
Fall Time	T_f		---	8	---	
Input Capacitance	C_{iss}	$V_{DS}=-30V, V_{GS}=0V, f=1MHz$	---	720	---	pF
Output Capacitance	C_{oss}		---	42	---	
Reverse Transfer Capacitance	C_{rss}		---	32	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ¹	I_S		---	---	-3.3	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_S=-1A, T_J=25^{\circ}\text{C}$	---	---	-1	V
Reverse Recovery Time	t_{rr}	$I_F=-1A, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	30	---	nS
Reverse Recovery Charge	Q_{rr}		---	15	---	nC

Note:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating. The test condition is $V_{DD}=-25V, V_{GS}=-10V, L=0.1mH$
4. The power dissipation is limited by 150 $^{\circ}\text{C}$ junction temperature

Typical Characteristics

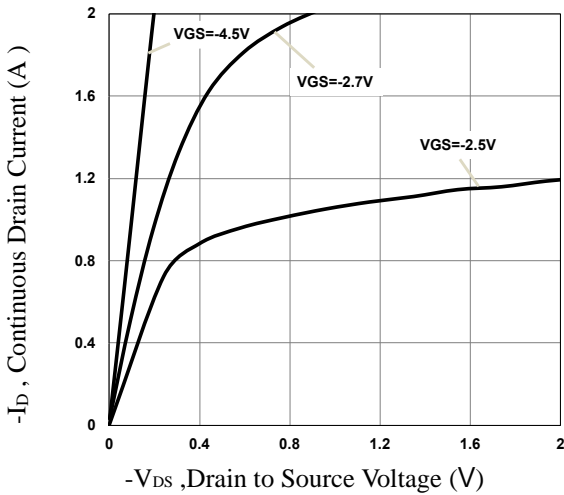


Fig.1 Typical Output Characteristics

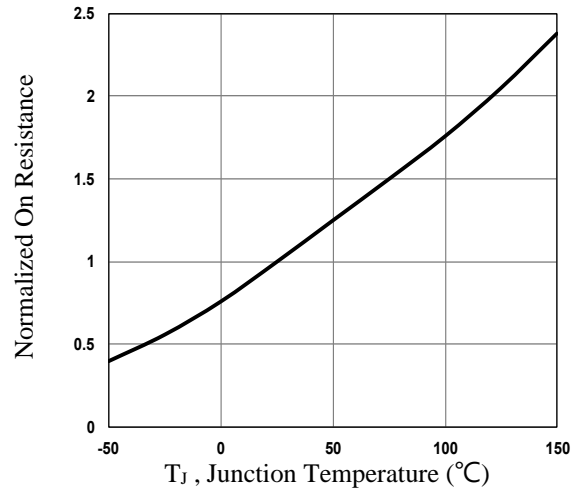


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

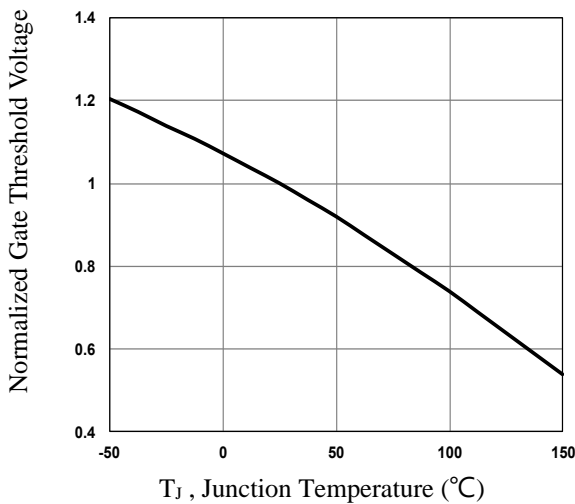


Fig.3 Normalized V_{th} vs. T_J

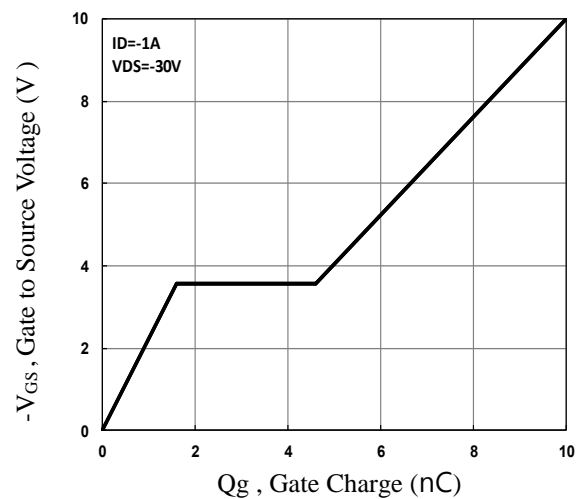


Fig.4 Gate Charge Waveform

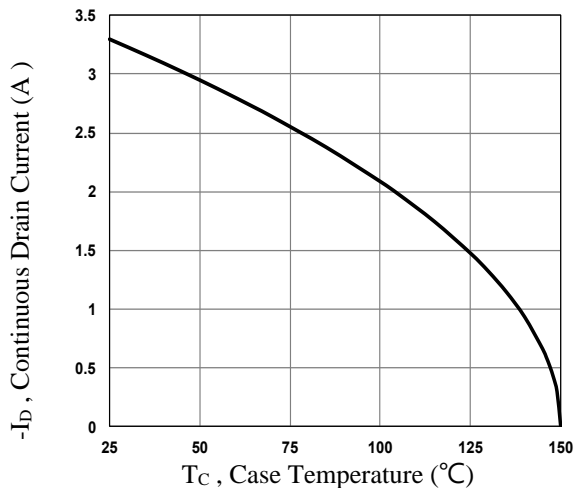


Fig.5 Continuous Drain Current vs. T_c

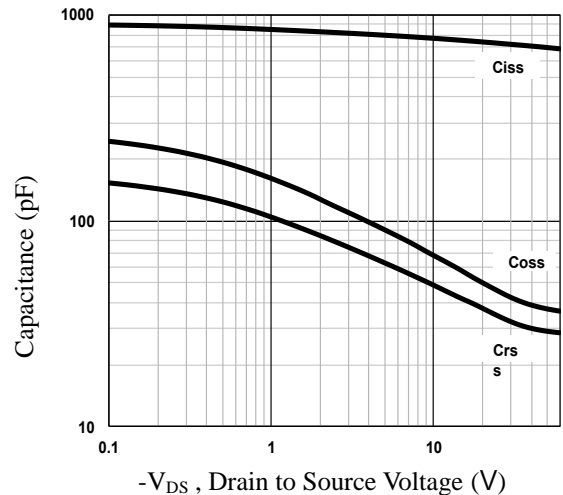


Fig.6 Capacitance Characteristics

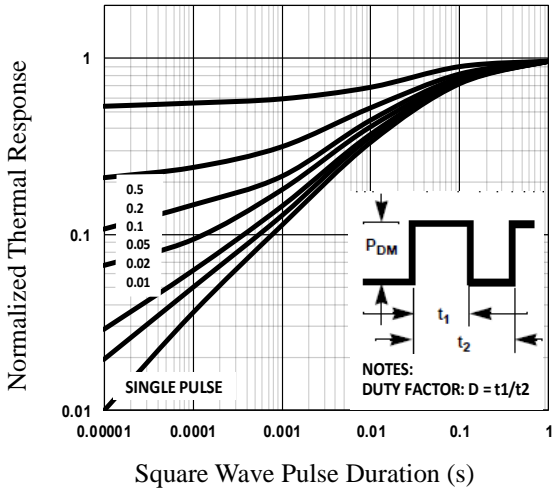


Fig.7 Normalized Transient Impedance

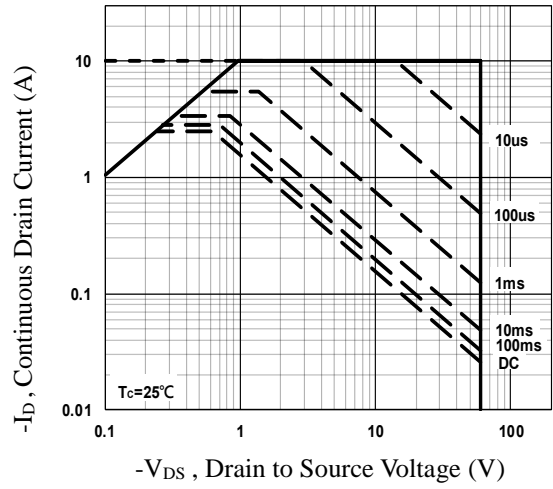
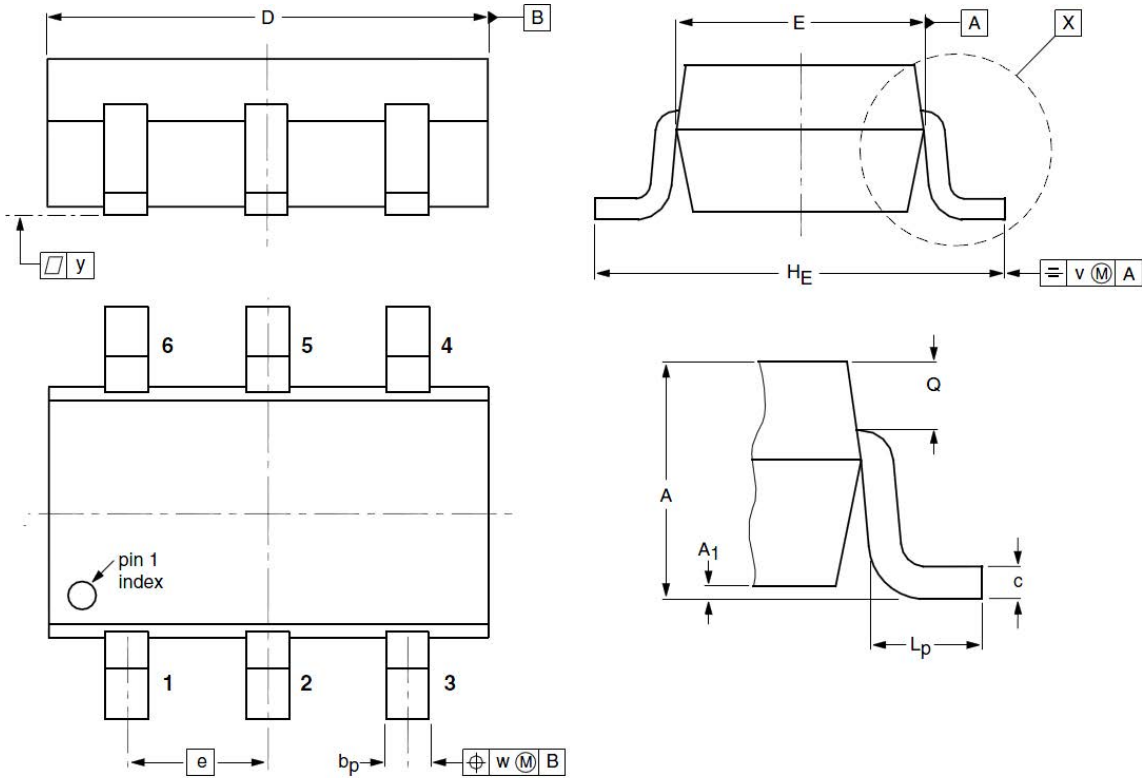


Fig.8 Maximum Safe Operation Area

SOT23-6L Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.07	1.45	A₁	0.01	0.05	0.15
b_p	0.30	0.40	0.50	c	0.10	0.15	0.22
D	2.70	2.92	3.10	E	1.35	1.55	1.75
e	--	0.95	--	H_E	2.50	2.80	3.00
L_p	0.30	0.45	0.60	Q	0.23	0.29	0.33
v	--	0.20	--	W	--	0.20	--
y	--	0.10	--				