

Features

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

Product Summary



V_{DS}	-150	V
I_D	-1	A
$R_{DS(ON)}$ (at $V_{GS}=-10V$)	1	Ω
$R_{DS(ON)}$ (at $V_{GS}=-6V$)	1.2	Ω

Applications

- High Frequency Point-of-Load, Synchronous Buck Converter for MB/NB/UMPC/VGA
- 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}	-150	V
Gate-Source Voltage	V_{GS}	± 25	V
Continuous Drain Current, $V_{GS} @ -10V^1$	$I_D@T_A=25^{\circ}C$	-1	A
Continuous Drain Current, $V_{GS} @ -10V^1$	$I_D@T_A=70^{\circ}C$	-0.78	A
Pulsed Drain Current ²	I_{DM}	-4	A
Total Power Dissipation ³	$P_D@T_A=25^{\circ}C$	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}	$V_{GS}=0V, I_D=-250\mu A$	-150	---	---	V
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-1A$	---	0.77	1	Ω
		$V_{GS}=-6V, I_D=-0.8A$	---	0.8	1.2	Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.2	-2	-4	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-120V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	-25	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 25V, V_{DS}=0V$	---	---	± 100	nA
Forward Transconductance	g_{fs}	$V_{DS}=-10V, I_D=-1A$	---	3.4	---	S
Total Gate Charge	Q_g	$V_{DS}=-75V, V_{GS}=-10V, I_D=-1A$	---	12	19.2	nC
Gate-Source Charge	Q_{gs}		---	2	---	
Gate-Drain Charge	Q_{gd}		---	2.5	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DS}=-75V, V_{GS}=-10V, R_G=3.3\Omega, I_D=-1A$	---	9	---	ns
Rise Time	T_r		---	5	---	
Turn-Off Delay Time	$T_{d(off)}$		---	24	---	
Fall Time	T_f		---	8	---	
Input Capacitance	C_{iss}	$V_{DS}=-50V, V_{GS}=0V, f=1\text{MHz}$	---	520	832	pF
Output Capacitance	C_{oss}		---	33	---	
Reverse Transfer Capacitance	C_{rss}		---	20	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_S=-1.5A, T_J=25^{\circ}\text{C}$	---	---	-1.3	V
Reverse Recovery Time	t_{rr}	$I_F=-1A, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	40	---	nS
Reverse Recovery Charge	Q_{rr}		---	70	---	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 power dissipation is limited by 150 $^{\circ}\text{C}$ junction temperature

Typical Characteristics

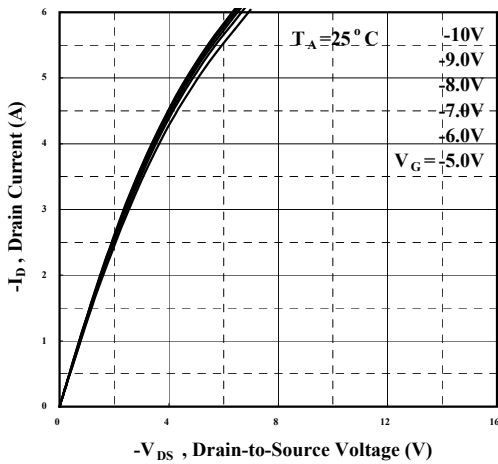


Fig 1. Typical Output Characteristics

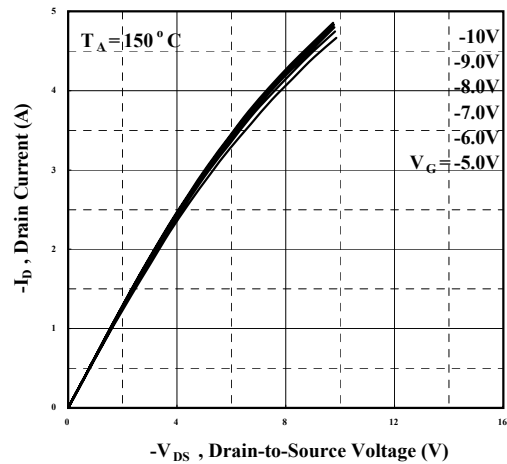


Fig 2. Typical Output Characteristics

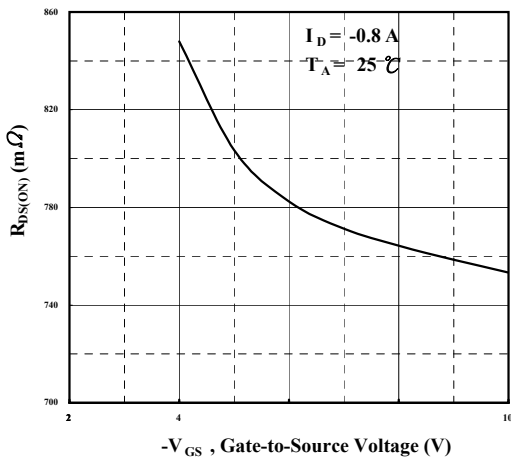


Fig 3. On-Resistance v.s. Gate Voltage

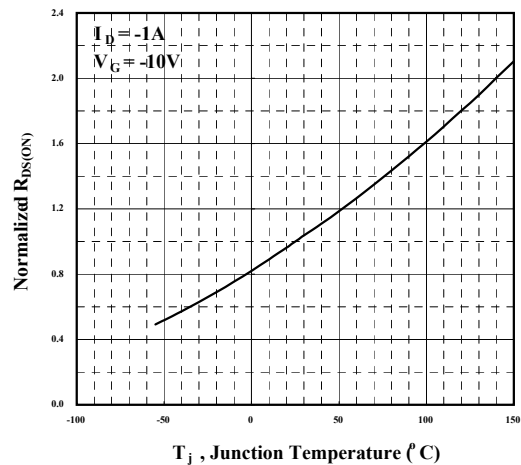


Fig 4. Normalized On-Resistance v.s. Junction Temperature

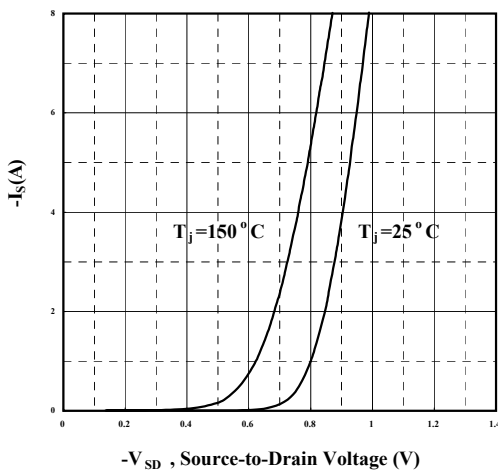


Fig 5. Forward Characteristic of Reverse Diode

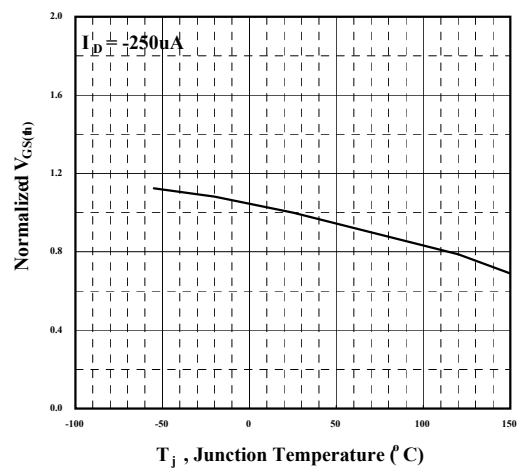


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

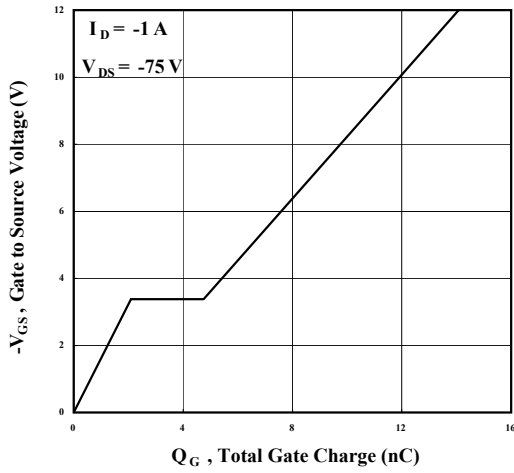


Fig 7. Gate Charge Characteristics

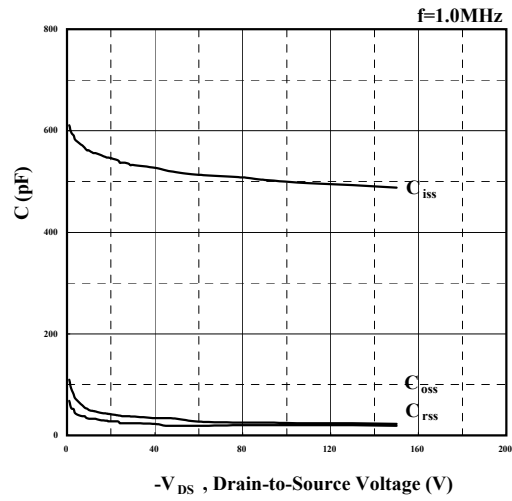


Fig 8. Typical Capacitance Characteristics

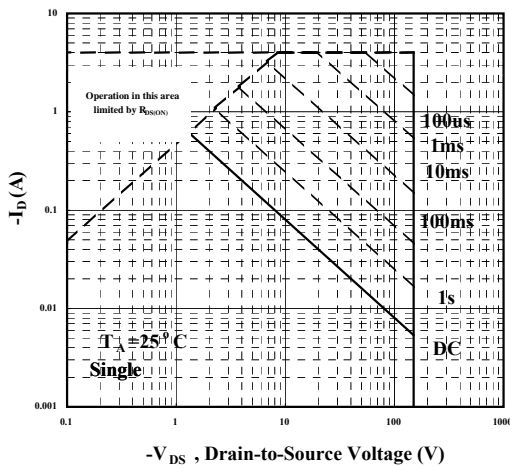


Fig 9. Maximum Safe Operating Area

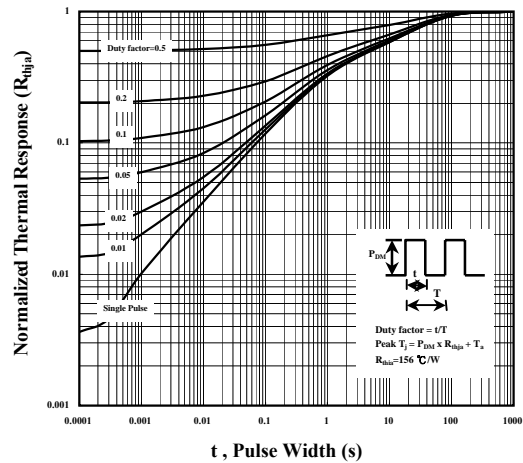


Fig 10. Effective Transient Thermal Impedance

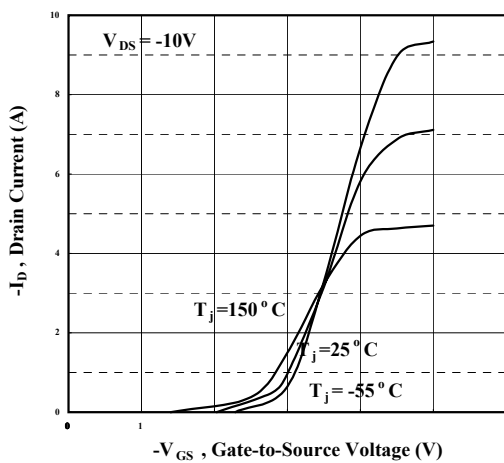


Fig 11. Transfer Characteristics

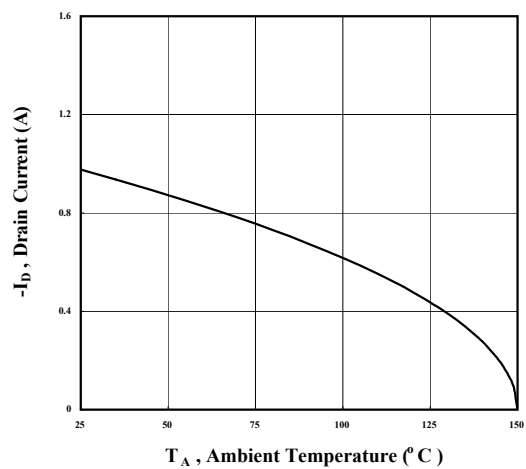


Fig 12. Drain Current v.s. Ambient Temperature

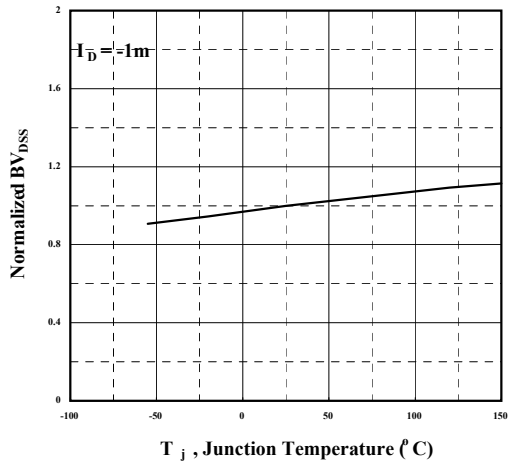


Fig 13. Normalized BV_{DSS} v.s. Junction

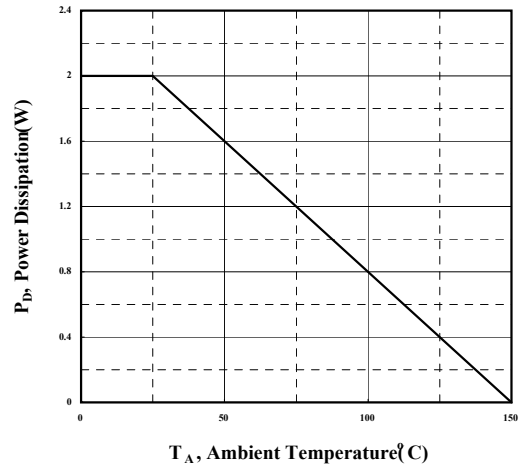


Fig 14. Total Power Dissipation

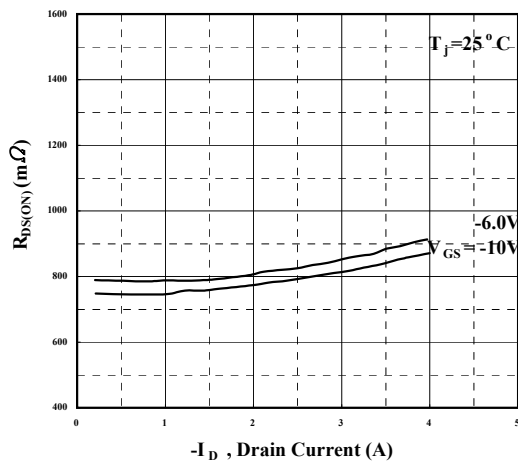
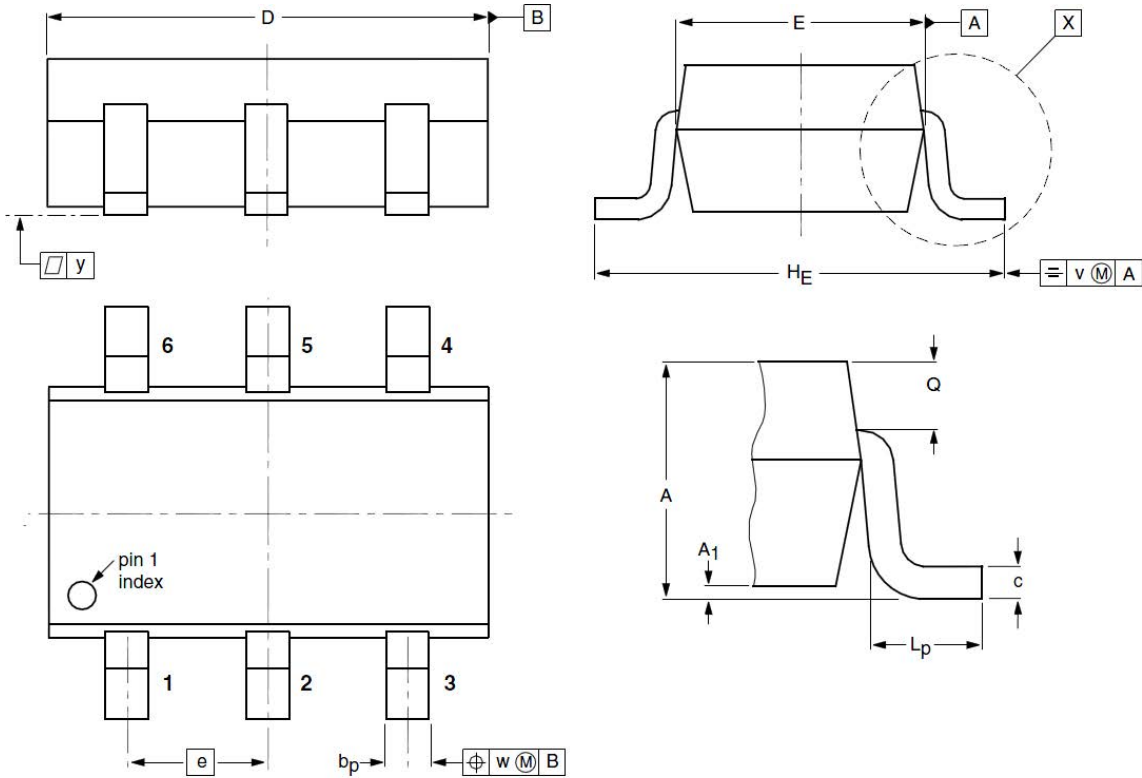


Fig 15. Typ. Drain-Source on State Resistance

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	--				