

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Green Device Available
- ESD: HBM ≥ 200V, < 400V
CDM > 250V, < 500V

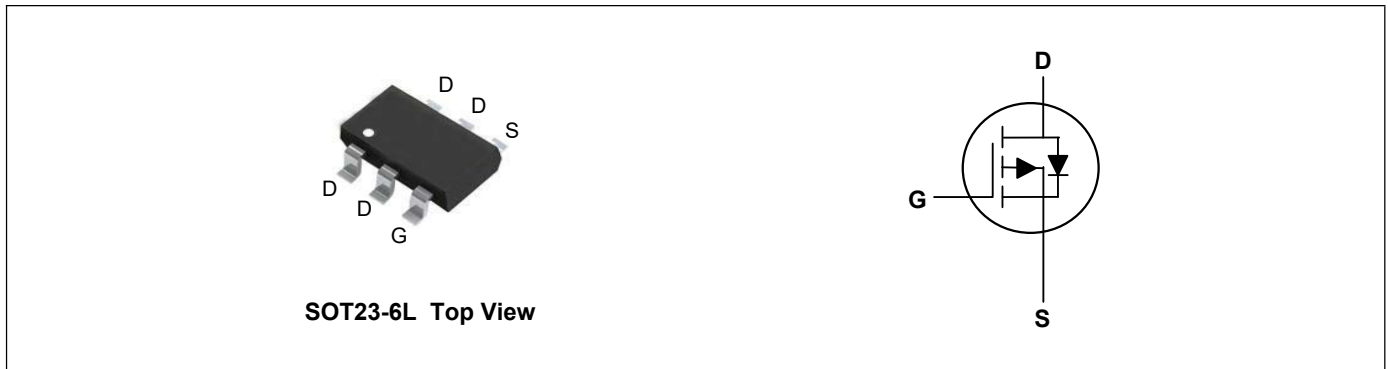
Product Summary



V_{DS}	-30	V
I_D	-5	A
$R_{DS(ON)}$ (at $V_{GS}=-10V$)	57	mΩ
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	65	mΩ

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}	-30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current ¹	I_D	-5	A
Pulsed Drain Current ²	I_{DM}	-30	A
Total Power Dissipation ³	P_D	2	W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient ¹ (t ≤ 10s)	$R_{\theta JA}$	---	110	°C/W

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-30	---	---	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-5A	---	44	57	mΩ
		V _{GS} =-4.5V, I _D =-3A	---	56	65	mΩ
		V _{GS} =-2.5V, I _D =-2A	---	76	100	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250uA	-0.6	---	-1.1	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	---	---	±100	nA
Forward Transconductance	g _{fs}	V _{DS} =-5V, I _D =-5A	7	11	---	S
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	6	---	Ω
Total Gate Charge	Q _g	V _{DS} =-15V, V _{GS} =-4.5V, I _D =-5A	---	9.5	---	nC
Gate-Source Charge	Q _{gs}		---	2.1	---	
Gate-Drain Charge	Q _{gd}		---	2.9	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =-15V, V _{GS} =-10V, R _G =6Ω, I _D =-5A	---	6	---	ns
Rise Time	T _r		---	3	---	
Turn-Off Delay Time	T _{d(off)}		---	40	---	
Fall Time	T _f		---	11	---	
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	943	---	pF
Output Capacitance	C _{oss}		---	108	---	
Reverse Transfer Capacitance	C _{rss}		---	73	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ¹	I _S	T _C =25°C	---	---	-3	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =-1A, T _J =25°C	---	-0.8	-1.3	V
Reverse Recovery Time	t _{rr}	I _F =-5A, di/dt=100A/μs, T _J =25°C	---	21	---	nS
Reverse Recovery Charge	Q _{rr}		---	12.8	---	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 ≤ 300us, duty cycle ≤ 2%
- 3.The power dissipation is limited by 150°C junction temperature

Typical Characteristics

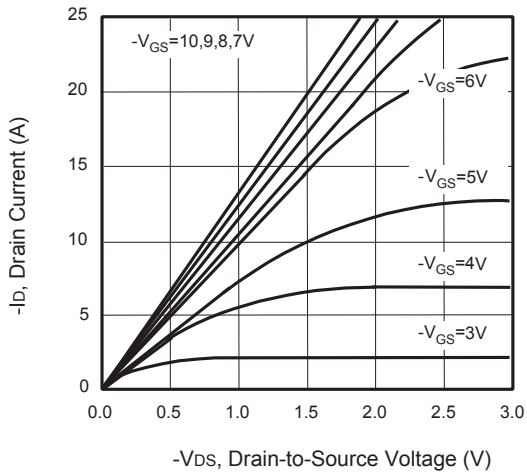


Figure 1. Output Characteristics

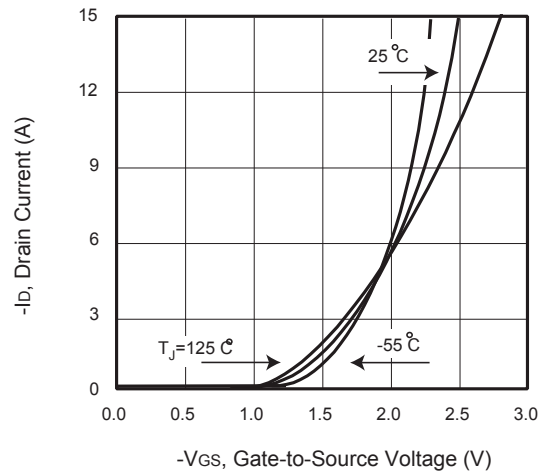


Figure 2. Transfer Characteristics

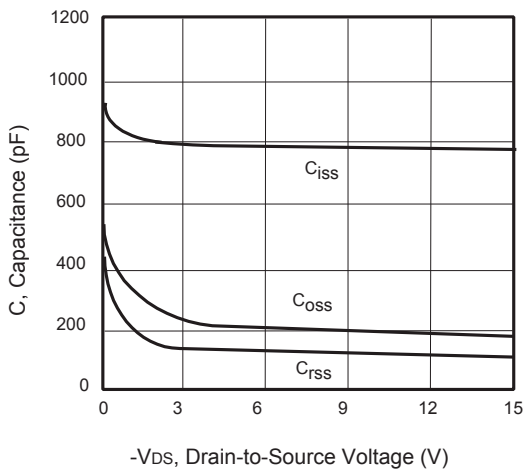


Figure 3. Capacitance

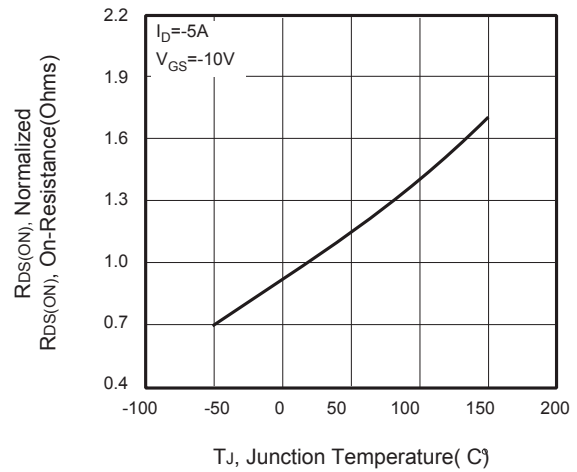


Figure 4. On-Resistance Variation with Temperature

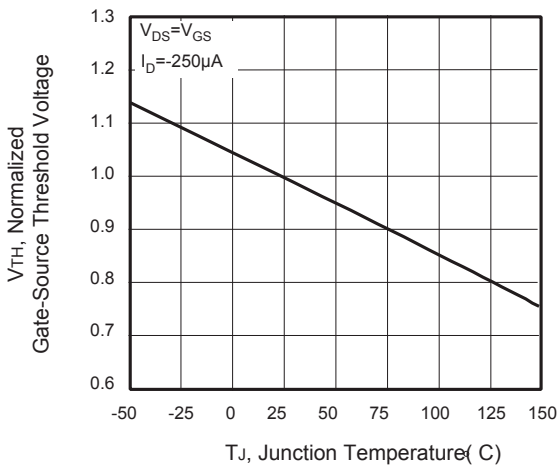


Figure 5. Gate Threshold Variation with Temperature

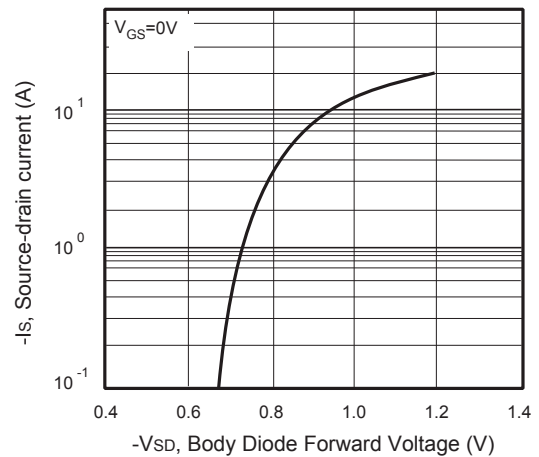


Figure 6. Body Diode Forward Voltage Variation with Source Current

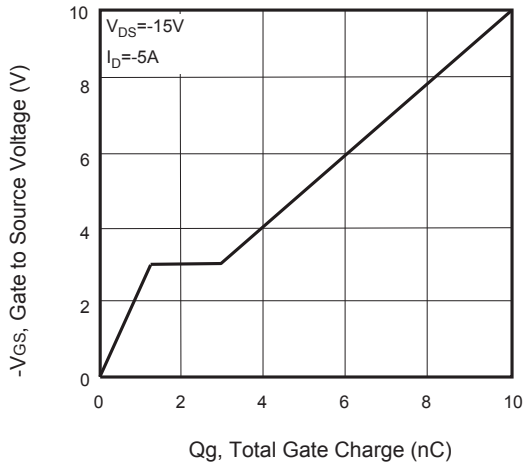


Figure 7. Gate Charge

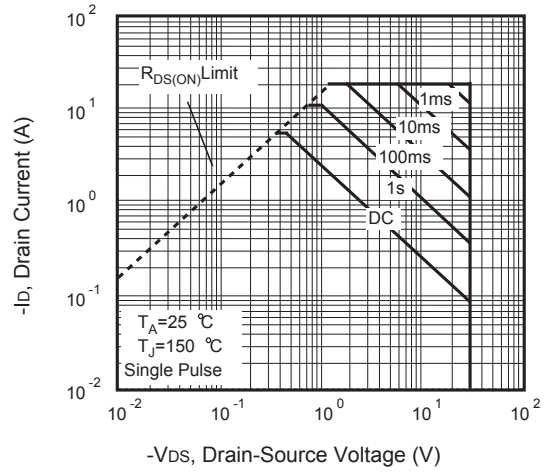


Figure 8. Maximum Safe Operating Area

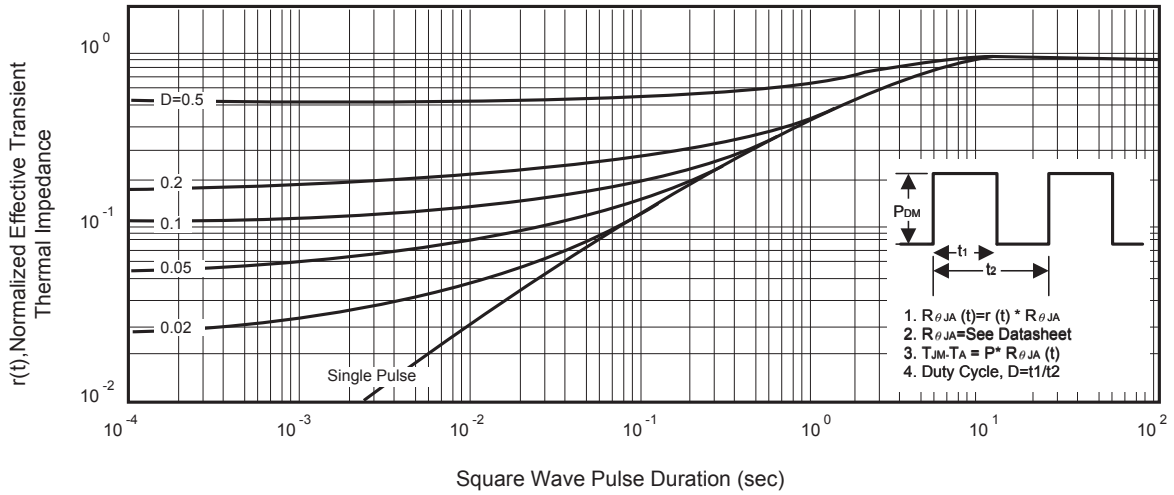
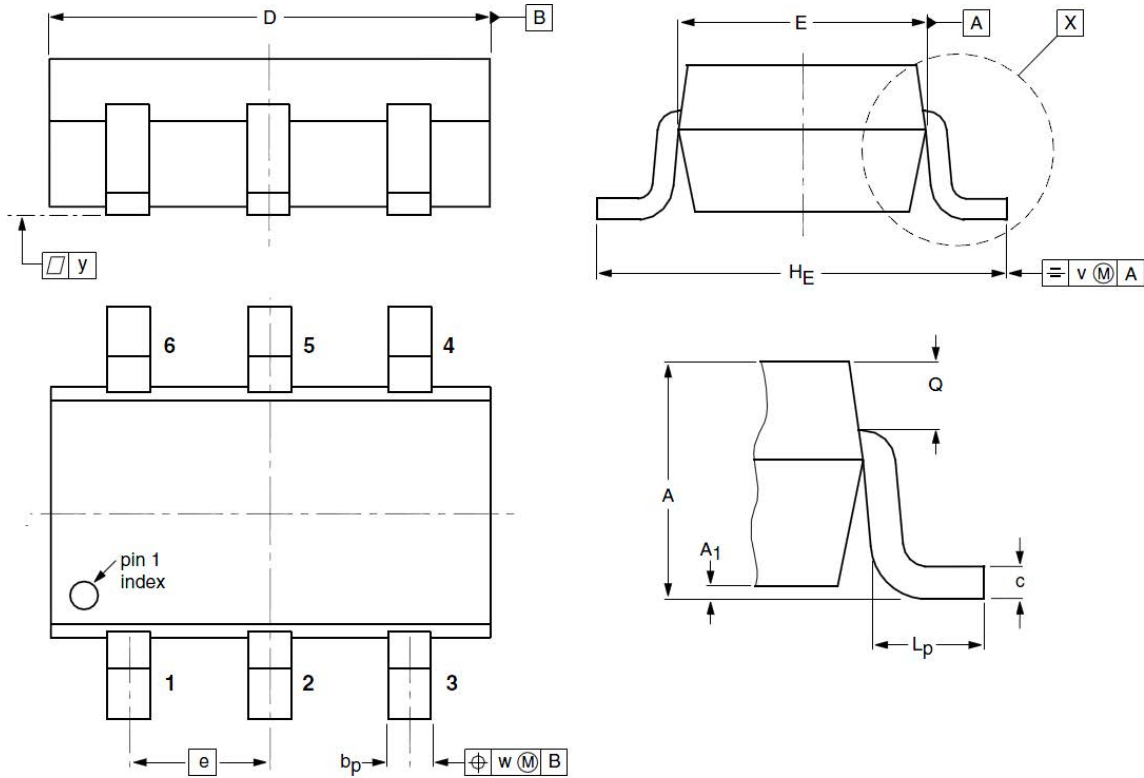


Figure 9. Normalized Thermal Transient Impedance Curve

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	--				