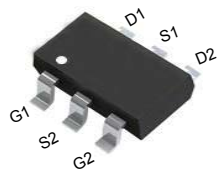
30V N+P-Channel MOSFET

Features

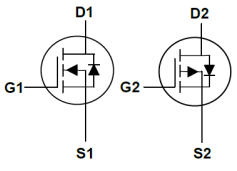
- High Speed Power Switching
- Reliable and Rugged
- ROHS Compliant
- 100% Avalanche Tested

Pin Description

SOT-23-6L



Symbol



Applications

- Power Management in Desktop Computer
- DC/DC Converters

	N-ch	P-ch	
V_{DSS}	30	-30	V
$R_{DS(ON)-Typ}$	39	82	mΩ
I_D	4.9	-3	A

Absolute Maximum Ratings(T_A=25℃, Unless Otherwise Noted)

Symbol	Parameter	N-Ch	P-Ch	Unit
V_{DSS}	Drain-Source Voltage	30	-30	V
V_{GSS}	Gate-Source Voltage	±12	±12	V
T_J	Maximum Junction Temperature	-55 to 150		℃
T_{STG}	Storage Temperature Range	-55 to 150		℃
I_{DM} ①	Pulse Drain Current Tested	19	-12	A
I_D	Continuous Drain Current	4.9	-3	A
P_D	Maximum Power Dissipation	1.4	1.4	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	125	℃/W

Note ①: Max. current is limited by bonding wire.

Note ②: UIS tested and pulse width are limited by maximum junction temperature 150℃.

Note ③: Surface Mounted on 1in^2 FR-4 board with 1oz.

N-ch Electrical Characteristics (T_J=25℃, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	0.5	---	1.0	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V	---	---	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=4.5V, I_D=4.9A	---	39	49	mΩ
		V_{GS}=2.5V, I_D=3A	---	58	68	mΩ
Dynamic Characteristics⑤						
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2.3	---	Ω
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, Freq.=1MHz	---	215	---	pF
C_{oss}	Output Capacitance		---	37	---	
C_{rss}	Reverse Transfer Capacitance		---	28	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DD}=15V,V_{GS}=10V, I_D=1A,R_G=6Ω	---	5.2	---	nS
T_r	Turn-on Rise Time		---	11	---	
$T_{d(off)}$	Turn-off Delay Time		---	12	---	
T_f	Turn-off Fall Time		---	2.6	---	
Q_g	Total Gate Charge	V_{DS}=15V,V_{GS}=10V, I_D=4.9A	---	5.8	---	nC
Q_{gs}	Gate-Source Charge		---	1.1	---	
Q_{gd}	Gate-Drain Charge		---	1.5	---	
Source-Drain Characteristics						
V_{SD}	Diode Forward Voltage	I_S=1A, V_{GS}=0V	---	---	1.1	V
t_{rr}	Reverse Recovery Time	I_F=4.9A, dI_F/dt=100A/us	---	9	---	nS
Q_{rr}	Reverse Recovery Charge		---	4.3	---	nC

Note ④： Pulse test (pulse width≤300us, duty cycle≤2%).

Note ⑤ : Guaranteed by design, not subject to production testing.

P-ch Electrical Characteristics (T_J=25℃, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	-30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-24V, V_{GS}=0V	---	---	-1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=-250uA	-0.5	---	-1.0	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V	---	---	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=-4.5V, I_D=-3A	---	82	100	mΩ
		V_{GS}=-2.5V, I_D=-1.9A	---	102	150	mΩ
Dynamic Characteristics⑤						
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	7	---	Ω
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, Freq.=1MHz	---	229	---	pF
C_{oss}	Output Capacitance		---	42	---	
C_{rss}	Reverse Transfer Capacitance		---	33	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DD}=-15V,V_{GS}=-10V, I_D=-1A,R_G=6Ω	---	7.2	---	nS
T_r	Turn-on Rise Time		---	9	---	
$T_{d(off)}$	Turn-off Delay Time		---	15	---	
T_f	Turn-off Fall Time		---	3.6	---	
Q_g	Total Gate Charge	V_{DS}=-15V,V_{GS}=-10V, I_D=-3A	---	6.5	---	nC
Q_{gs}	Gate-Source Charge		---	1.1	---	
Q_{gd}	Gate-Drain Charge		---	1	---	
Source-Drain Characteristics						
V_{SD}	Diode Forward Voltage	I_S=-1A, V_{GS}=0V	---	---	-1.1	V
t_{rr}	Reverse Recovery Time	I_F=-3A,dI_F/dt=100A/us	---	19	---	nS
Q_{rr}	Reverse Recovery Charge		---	14	---	nC

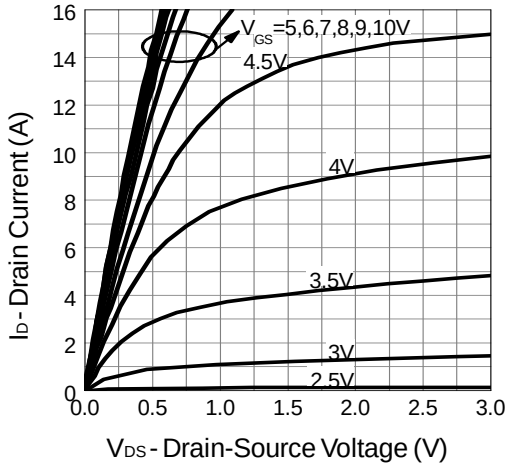
Note ④： Pulse test (pulse width≤300us, duty cycle≤2%).

Note ⑤ : Guaranteed by design, not subject to production testing.

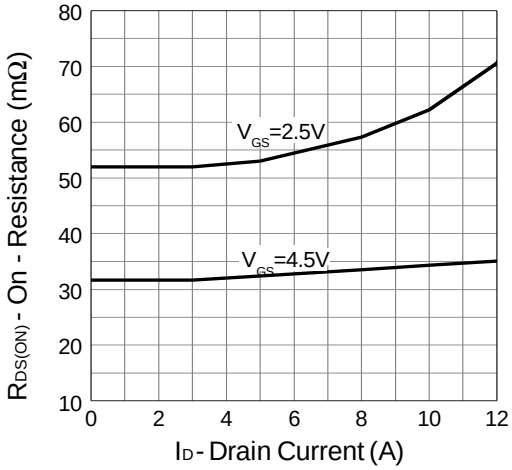
30V N+P-Channel MOSFET

N-ch Typical Characteristics

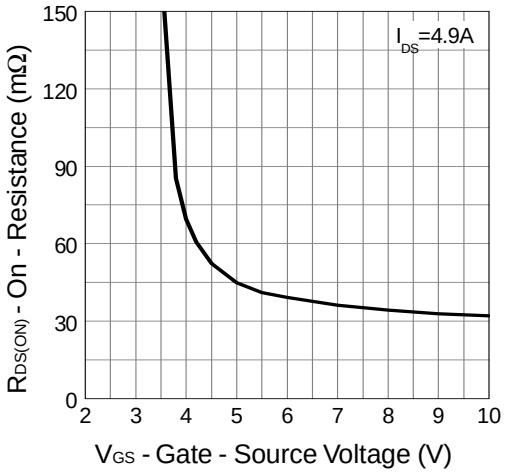
Output Characteristics



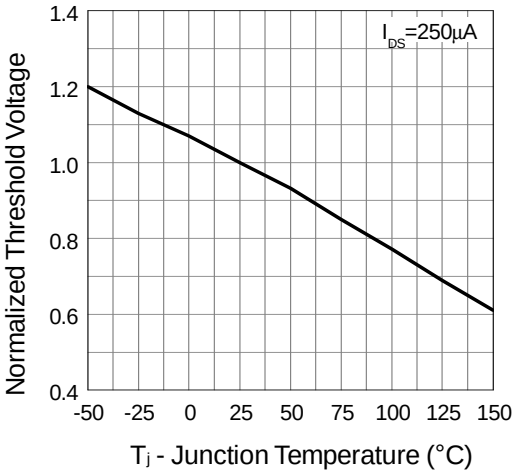
Drain-Source On Resistance



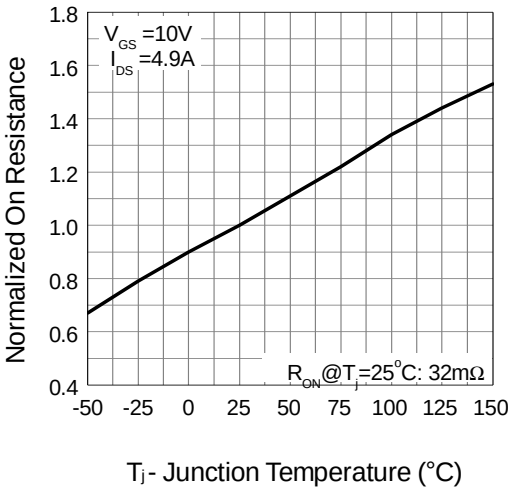
Gate-Source On Resistance



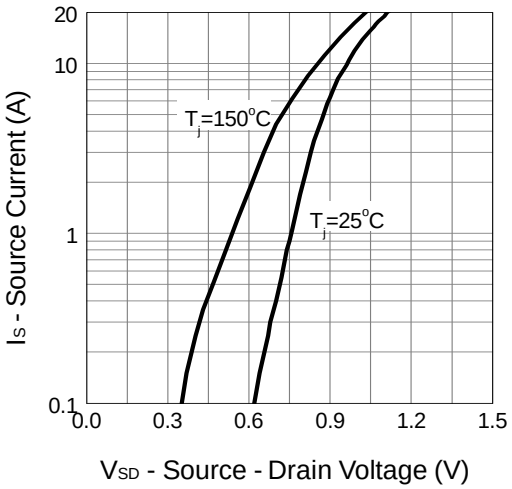
Gate Threshold Voltage



Drain-Source On Resistance

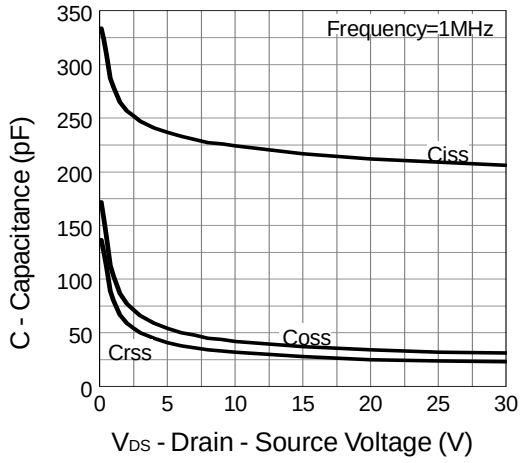


Source-Drain Diode Forward

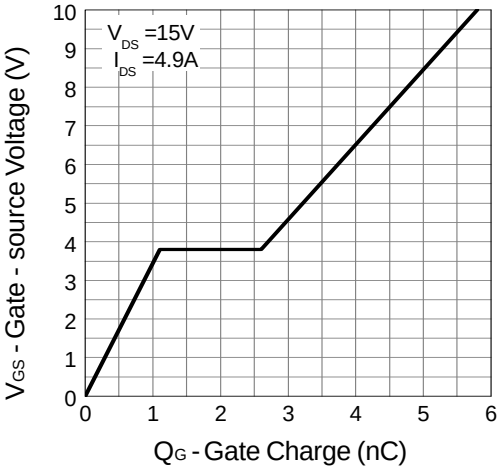


30V N+P-Channel MOSFET

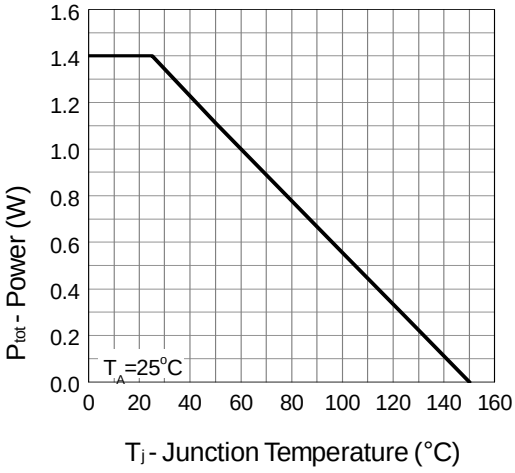
Capacitance



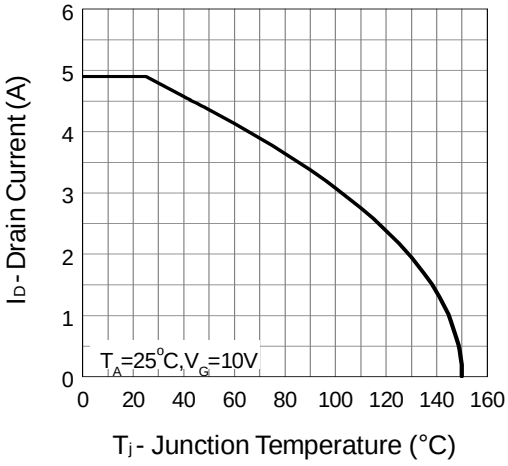
Gate Charge



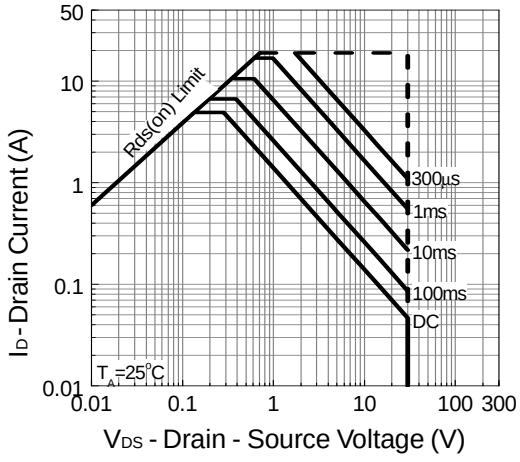
Power Dissipation



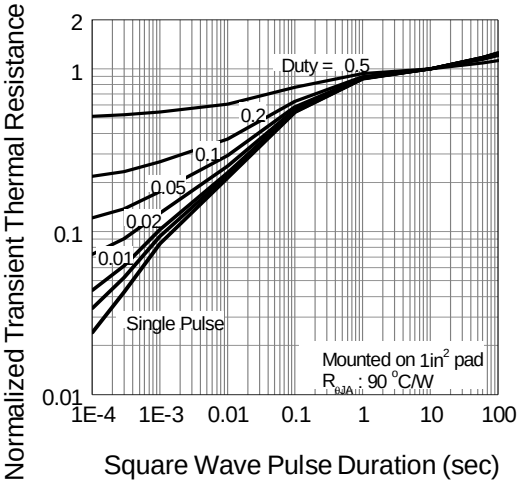
Drain Current



Safe Operation Area

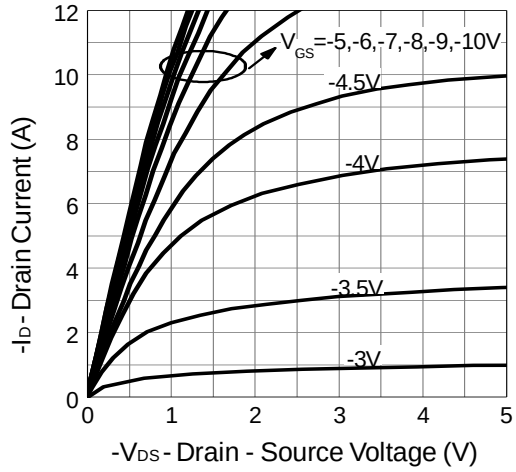


Thermal Transient Impedance

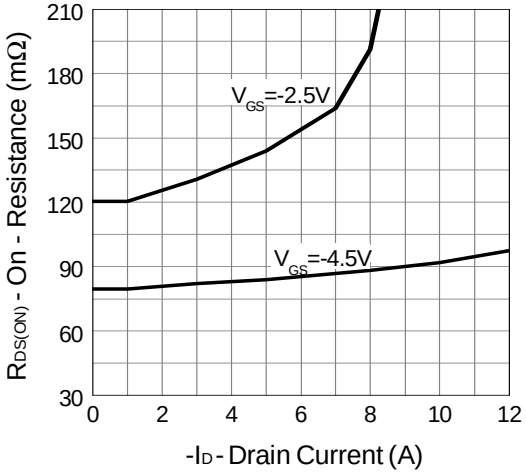


P-ch Typical Characteristics

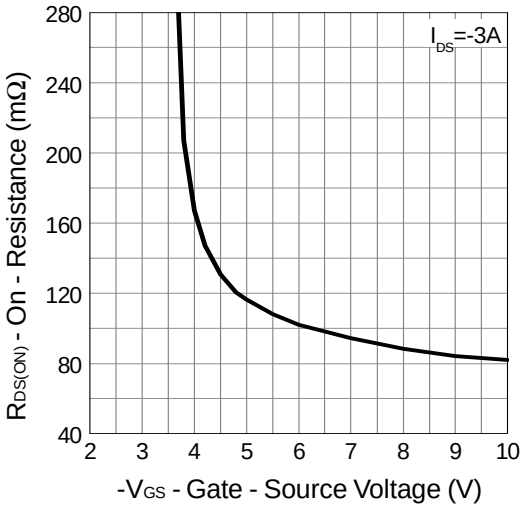
Output Characteristics



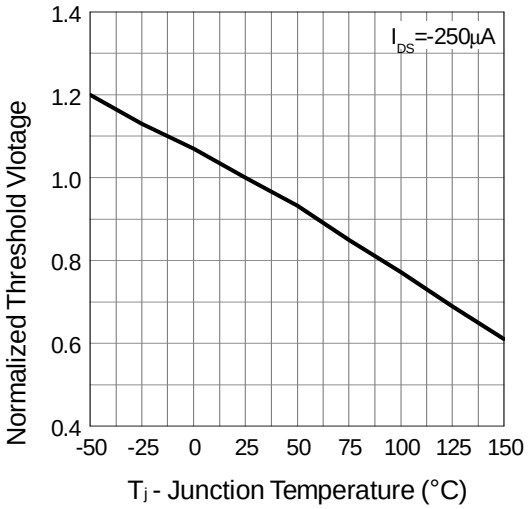
Drain-Source On Resistance



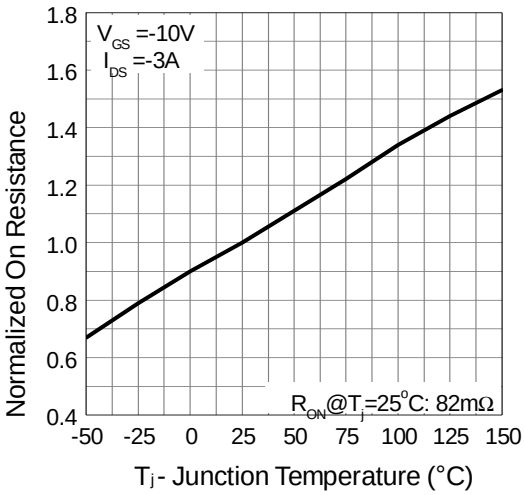
Gate-Source On Resistance



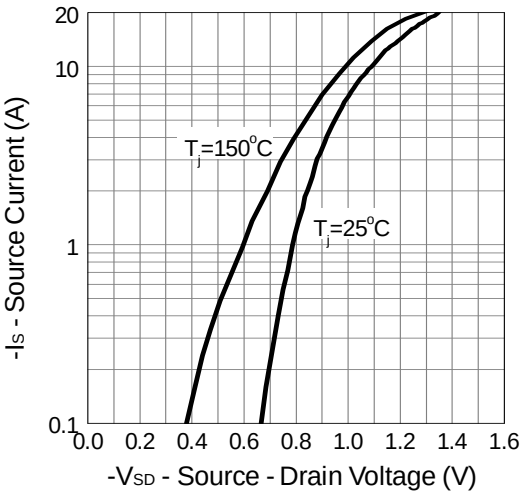
Gate Threshold Voltage



Drain-Source On Resistance



Source-Drain Diode Forward



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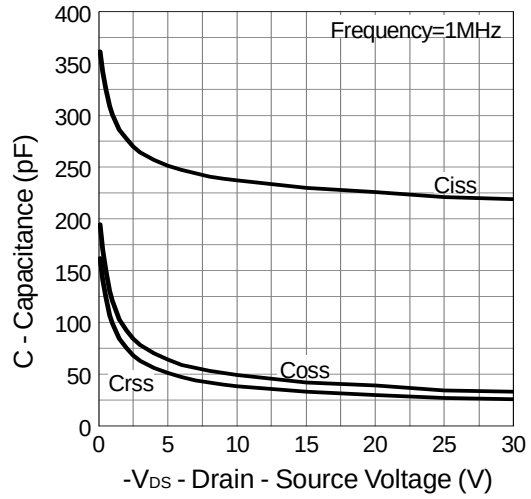
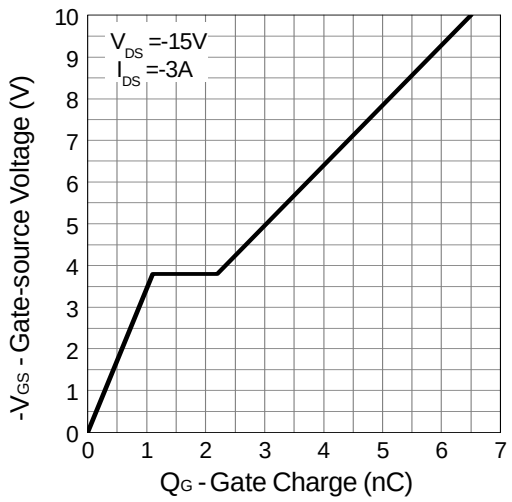
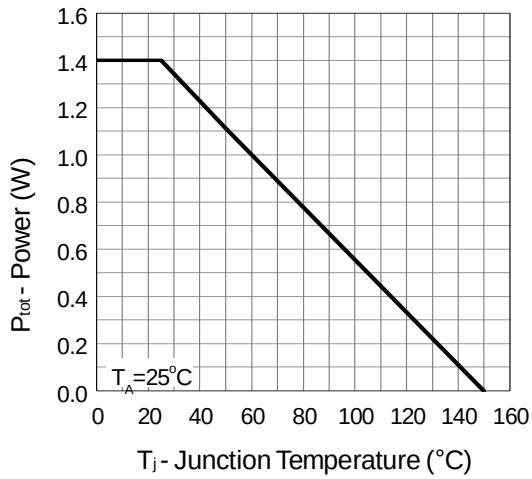
Capacitance



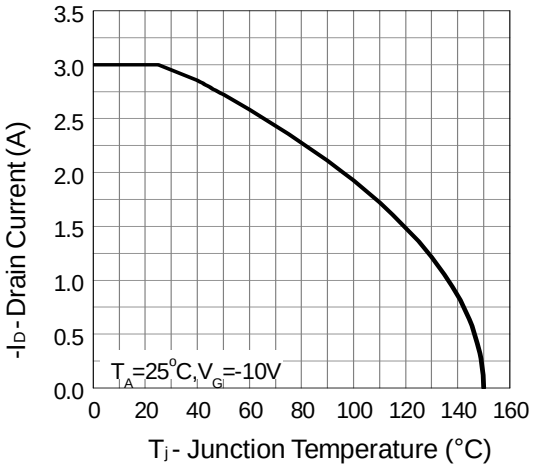
Gate Charge



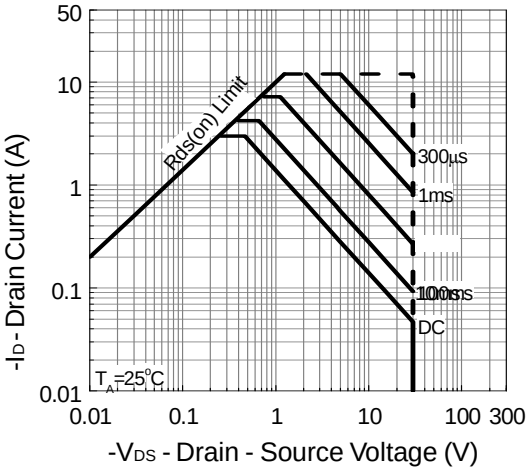
Power Dissipation



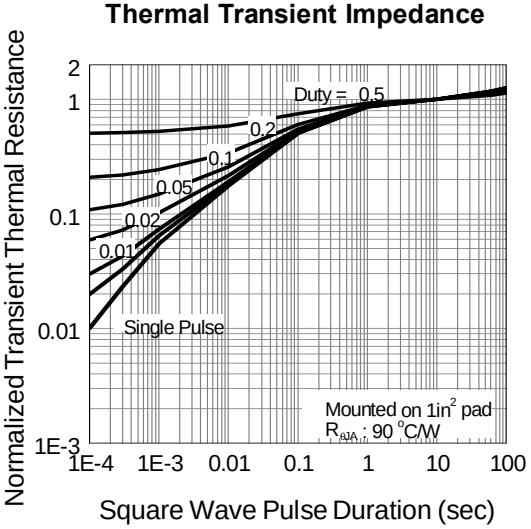
Drain Current



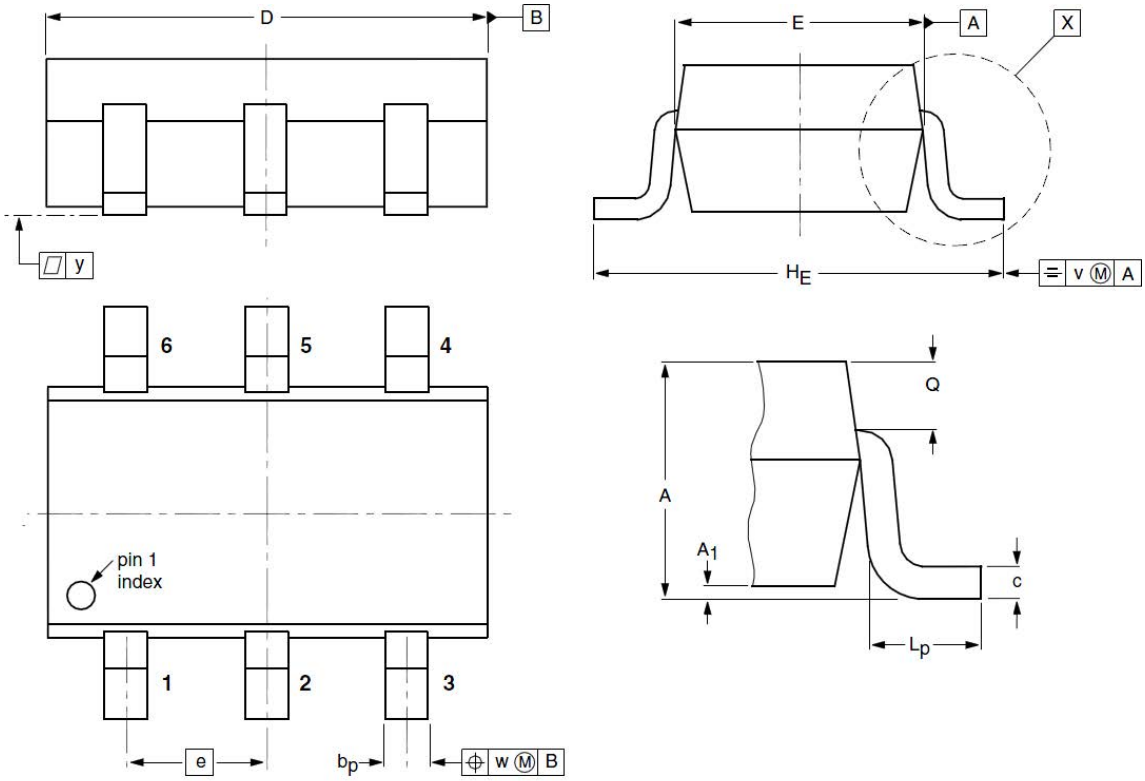
Safe Operation Area



Thermal Transient Impedance



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	**A_1**	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	--				