

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	25mΩ@4.5V	5A
	35mΩ@2.5V	
-20V	55mΩ@-4.5V	-4A
	65mΩ@-2.5V	



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

技术 品质 服务

www.siliup.com

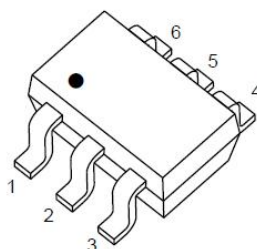
Feature

- High power and current handing capability
- Surface mount package

Application

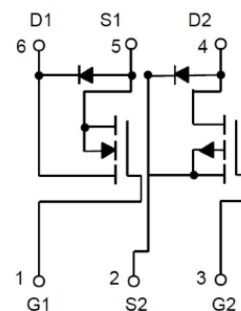
- Battery Switch
- DC/DC Converter

Package

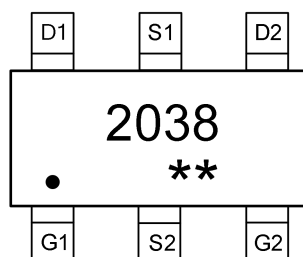


SOT-23-6L

Circuit diagram



Marking



2038
**

:Device Code
:Week Code

Order Information

Device	Package	Unit/Tape
SP2038CTS	SOT-23-6L	3000

Absolute maximum ratings (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Value		Units
		N-Channel	P-Channel	
Drain-Source Voltage	V_{DS}	20	-20	V
Gate-Source Voltage	V_{GS}	± 12	± 12	V
Continuous Drain Current	I_D	5	-4	A
Pulsed Drain Current	I_{DM}	20	-16	A
Power Dissipation	P_D	1.3		W
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	96		°C/W
Storage Temperature Range	T_{STG}	-55 to 150		°C
Operating Junction Temperature Range	T_J	-55 to 150		°C

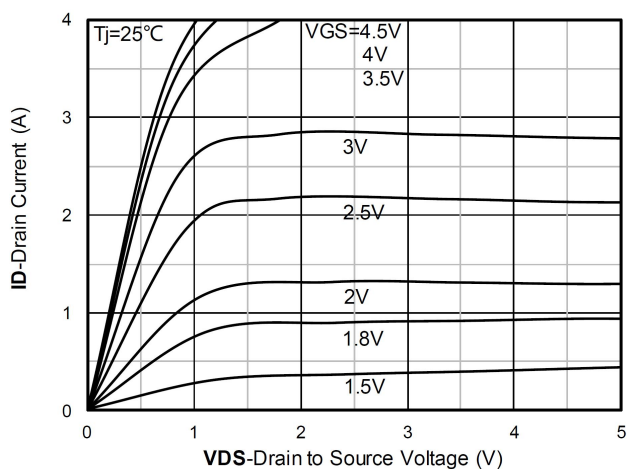
N-Channel Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250μA	20	-	-	V
Drain-Source Leakage Current	IDSS	VDS=16V , VGS=0V	-	-	1	uA
Gate-Source Leakage Current	IGSS	VGS=±12V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS=VGS , ID=250μA	0.5	0.7	1.0	V
Static Drain-Source On-Resistance	RDS(on)	VGS=4.5V , ID=4.5A	-	25	38	mΩ
		VGS=2.5V , ID=3.5A	-	35	45	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=10V , VGS=0V , f=1MHz	-	456	-	pF
Output Capacitance	Coss		-	62	-	
Reverse Transfer Capacitance	Crss		-	54	-	
Total Gate Charge	Qg	VDS=10V , VGS=4.5V , ID=2A	-	6	-	nC
Gate-Source Charge	Qgs		-	1	-	
Gate-Drain Charge	Qgd		-	1.4	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=10V VGS=4.5V , RG=2.7Ω , ID=2A	-	5	-	nS
Turn-On Rise Time	tr		-	13	-	
Turn-Off Delay Time	td(off)		-	65	-	
Turn-Off Fall Time	tf		-	28	-	
Source-Drain Diode characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V

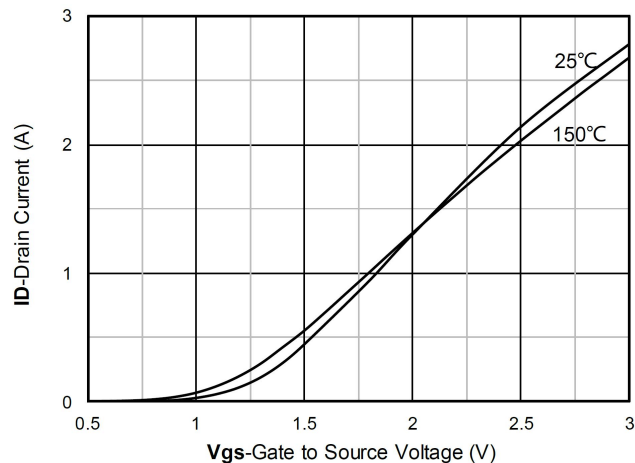
P-Channel Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=250μA	-20	-	-	V
Drain-Source Leakage Current	I _{DSS}	VDS=-16V , VGS=0V	-	-	-1	uA
Gate-Source Leakage Current	I _{GSS}	VGS=±12V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VDS=VGS , ID=-250μA	-0.5	-0.7	-1.0	V
Static Drain-Source On-Resistance	RDS(ON)	VGS=-4.5V , ID=-3A	-	55	80	mΩ
		VGS=-2.5V , ID=-2A	-	65	100	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=-10V , VGS=0V , f=1MHz	-	405	-	pF
Output Capacitance	Coss		-	75	-	
Reverse Transfer Capacitance	Crss		-	55	-	
Total Gate Charge	Qg	VDS=-10V , VGS=-4.5V , ID=-3A	-	5.5	-	nC
Gate-Source Charge	Qgs		-	1.18	-	
Gate-Drain Charge	Qgd		-	1.3	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VDD=-10V VGS=-4.5V , RG=3Ω , ID=-1A	-	6.4	-	nS
Turn-On Rise Time	tr		-	22	-	
Turn-Off Delay Time	td(off)		-	35	-	
Turn-Off Fall Time	tf		-	31	-	
Source-Drain Diode characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=-1A , TJ=25℃	-	-	-1.2	V

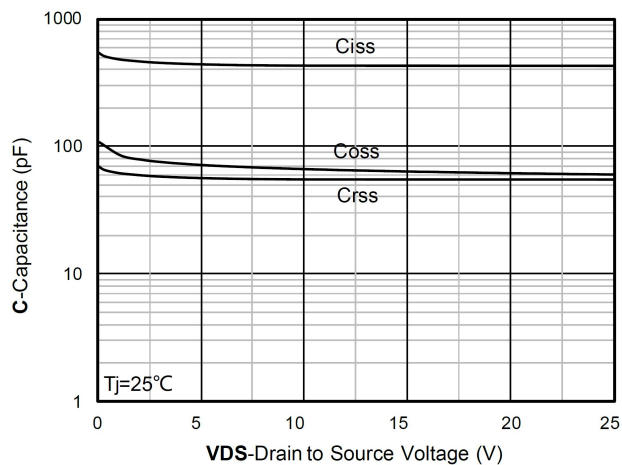
N-Channel Typical Characteristics



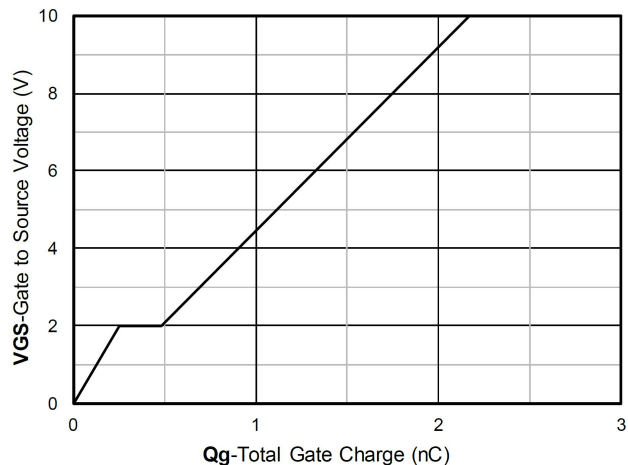
Output Characteristics



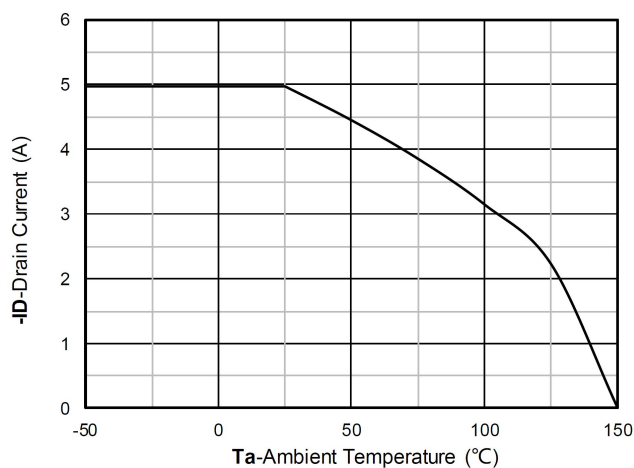
Transfer Characteristics



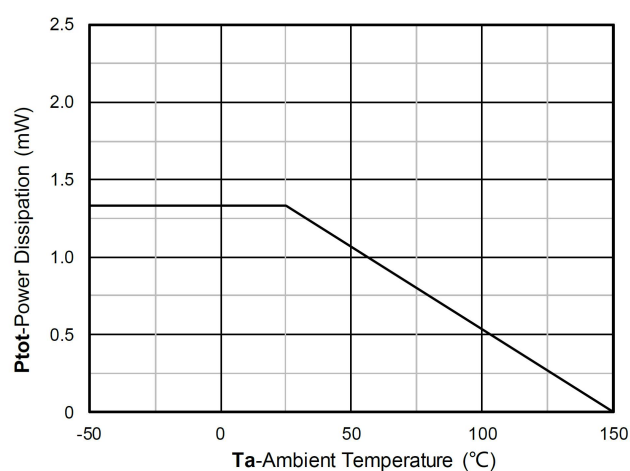
Capacitance Characteristics



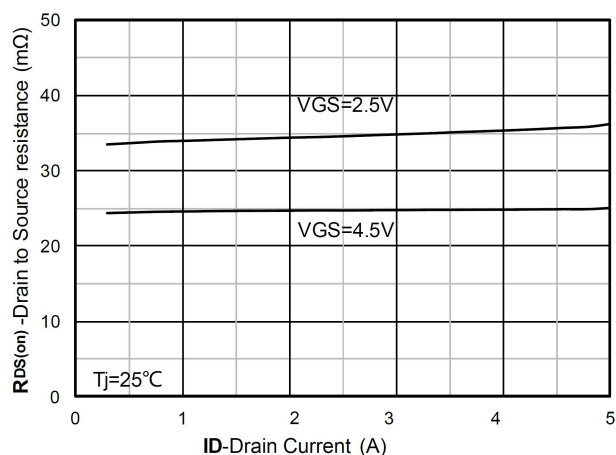
Gate Charge



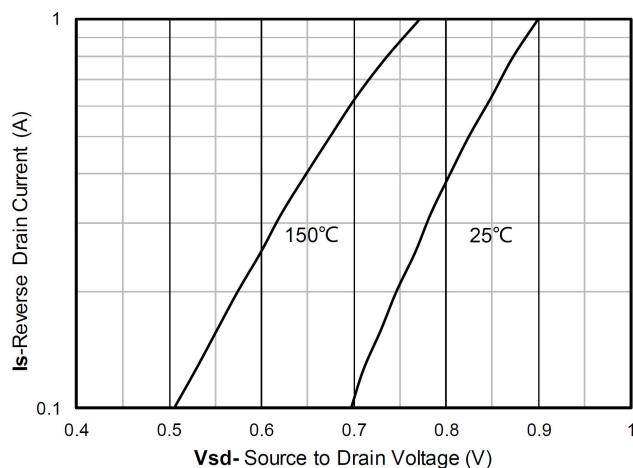
Current dissipation



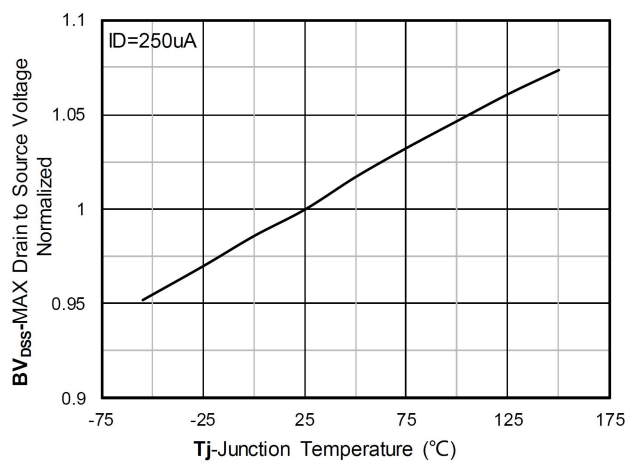
Power dissipation



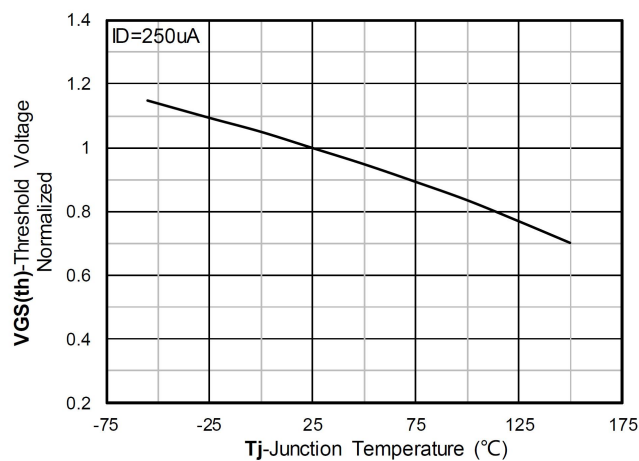
$R_{DS(on)}$ VS Drain Current



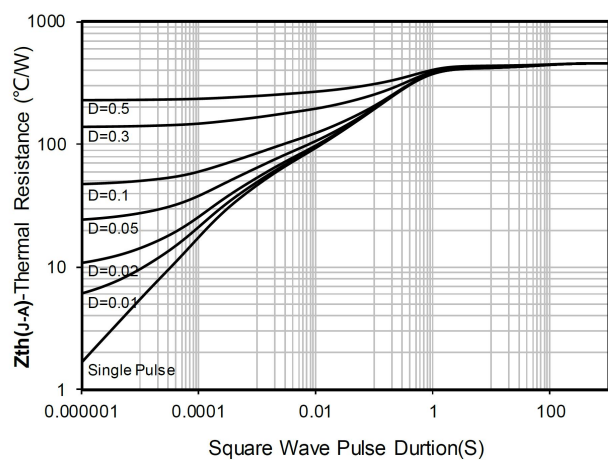
Forward characteristics of reverse diode



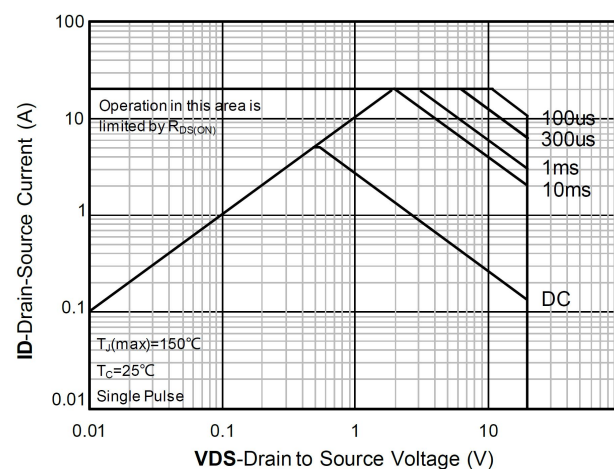
Normalized breakdown voltage



Normalized Threshold voltage

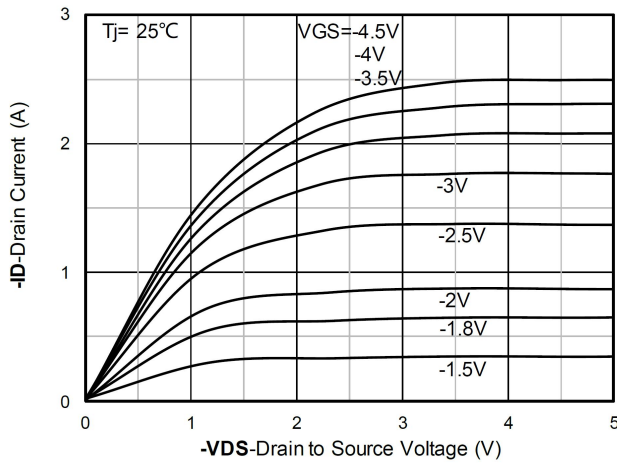


Maximum Transient Thermal Impedance

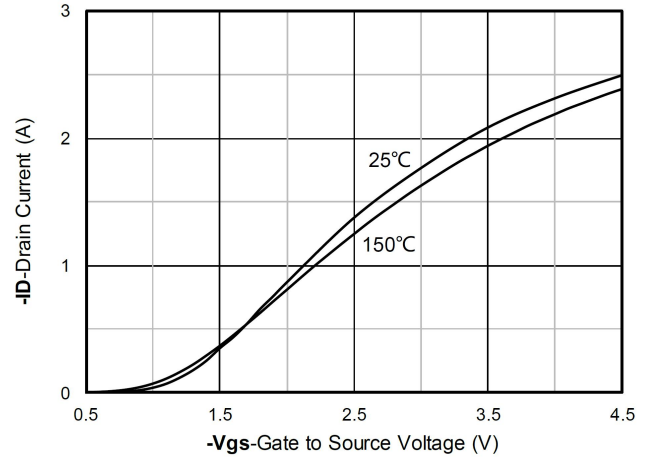


Safe Operation Area

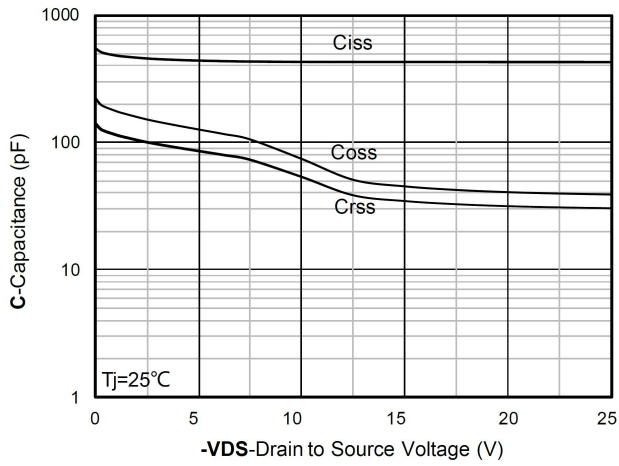
P-Channel Typical Characteristics



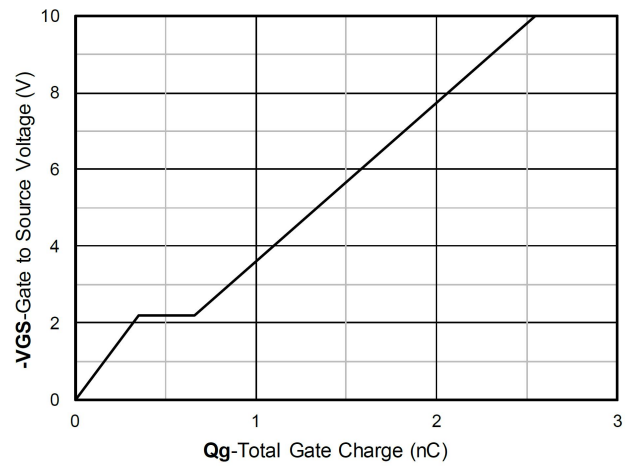
Output Characteristics



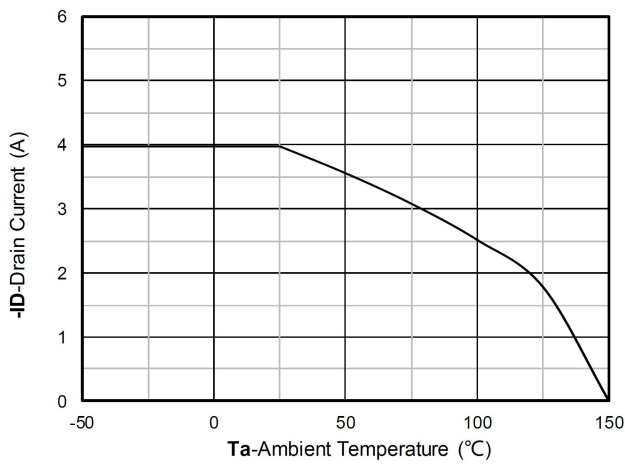
Transfer Characteristics



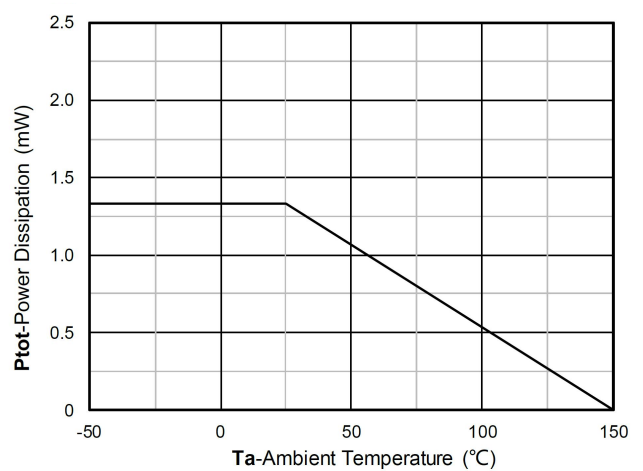
Capacitance Characteristics



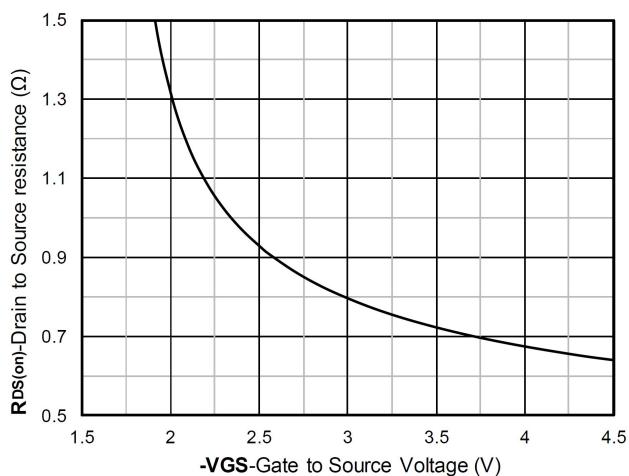
Gate Charge



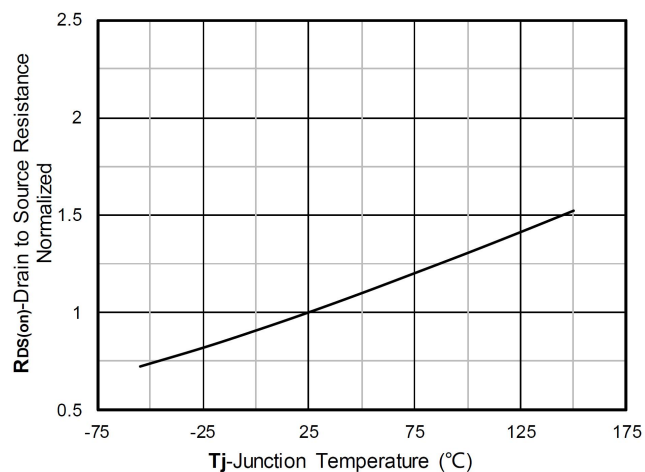
Current dissipation



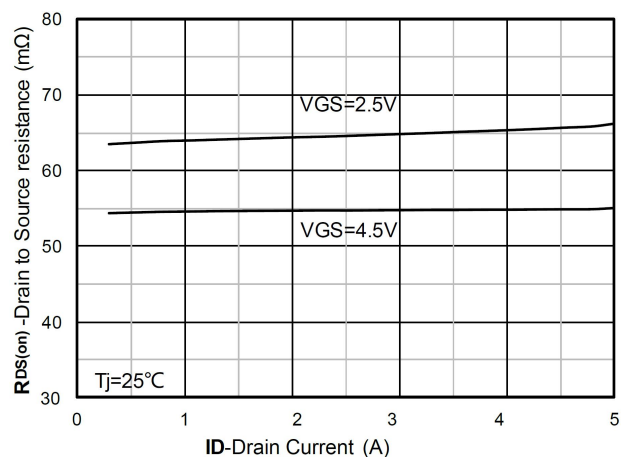
Power dissipation



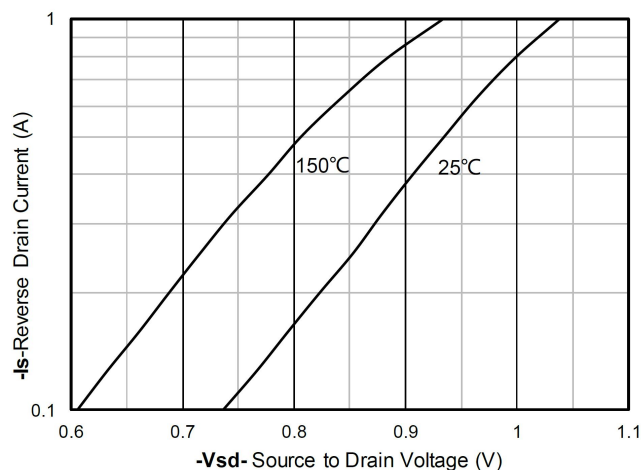
On-Resistance vs Gate to Source Voltage



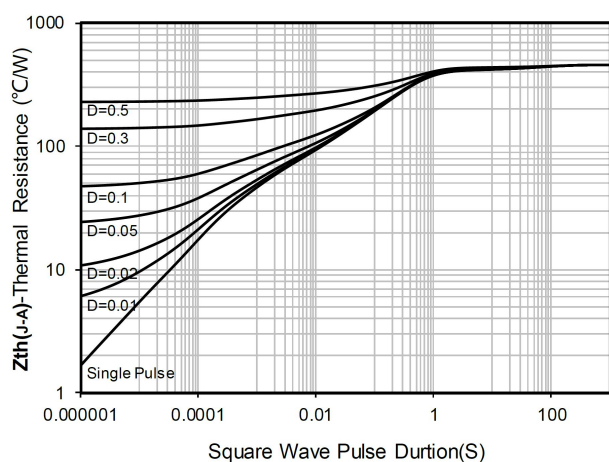
Normalized On-Resistance



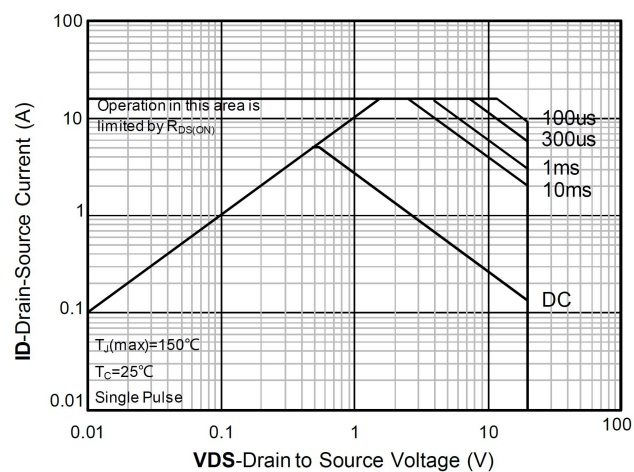
$R_{DS(on)}$ VS Drain Current



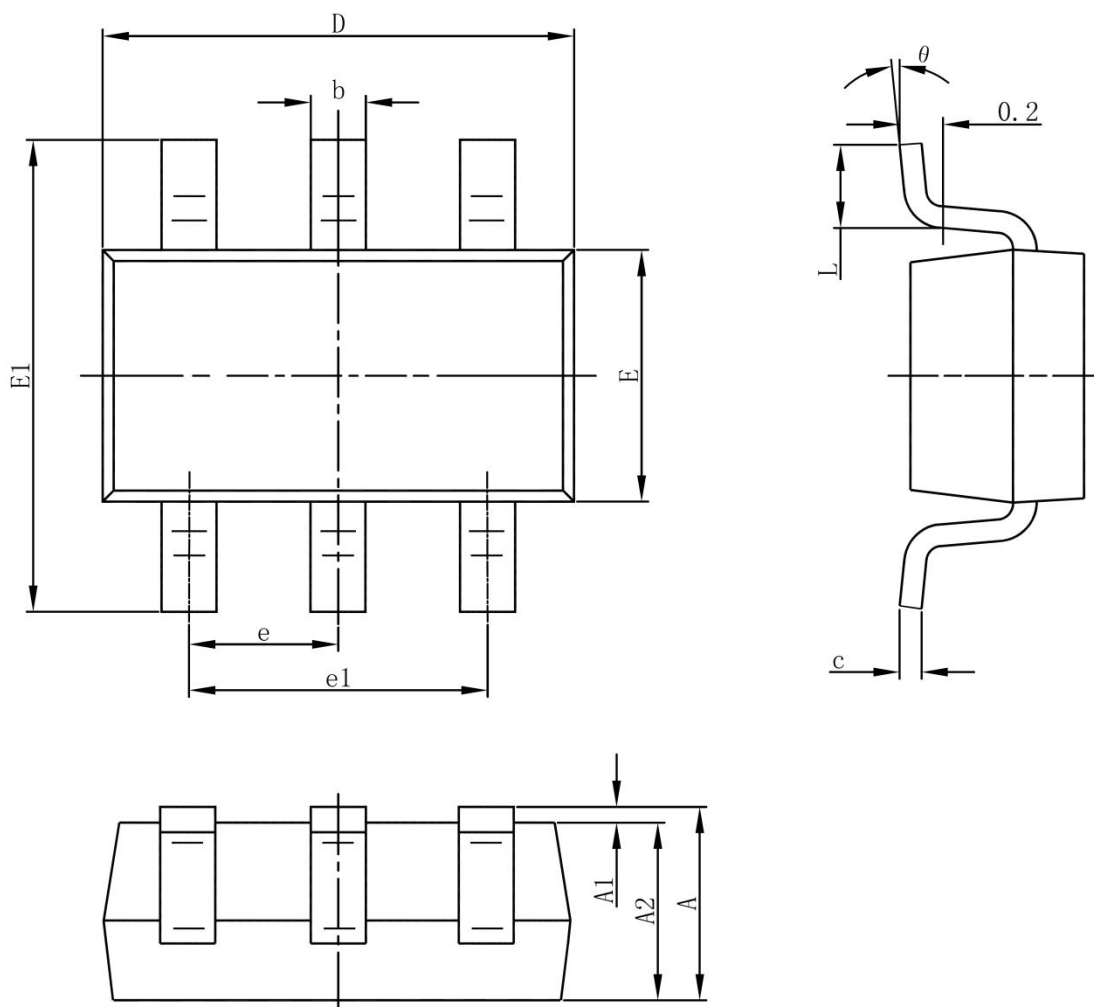
Forward characteristics of reverse diode



Maximum Transient Thermal Impedance



Safe Operation Area

SOT-23-6L Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [MOSFETs](#) category:

Click to view products by [Siliup](#) manufacturer:

Other Similar products are found below :

[MCH3443-TL-E](#) [MCH6422-TL-E](#) [NTNS3A92PZT5G](#) [IRFD120](#) [2SK2464-TL-E](#) [2SK3818-DL-E](#) [2SJ277-DL-E](#) [2SK2267\(Q\)](#) [MIC4420CM-TR](#) [IRFS350](#) [IPS70R2K0CEAKMA1](#) [AON6932A](#) [2SK2614\(TE16L1,Q\)](#) [DMN1017UCP3-7](#) [EFC2J004NUZTDG](#) [SCM040600](#) [NTE2384](#) [2N7000TA](#) [DMN2080UCB4-7](#) [US6M2GTR](#) [DMN31D5UDJ-7](#) [DMP22D4UFO-7B](#) [DMN1006UCA6-7](#) [DMN16M9UCA6-7](#) [STF5N65M6](#) [IRF40H233XTMA1](#) [STU5N65M6](#) [DMN13M9UCA6-7](#) [STU7N60DM2](#) [DMTH10H4M6SPS-13](#) [DMN2990UFB-7B](#) [2N7002W-G](#) [MCQ7328-TP](#) [IPB45P03P4L11ATMA2](#) [BXP4N65F](#) [BXP2N20L](#) [BXP2N65D](#) [TSM60NB380CP](#) [ROG](#) [SLF10N65ABV2](#) [IRF9395MTRPBF](#) [FCMT080N65S3](#) [NTD5C632NLT4G](#) [NTMFS0D55N03CGT1G](#) [NTMFS1D15N03CGT1G](#) [NTMTS0D4N04CTXG](#) [NTMYS2D1N04CLTWG](#) [NVD360N65S3T4G](#) [NVD5C464NLT4G](#) [NVMTS001N06CLTXG](#) [NVMTS1D1N04CTXG](#)