

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D	$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
20V	22mΩ@4.5V	7A	-20V	38mΩ@-4.5V	-5A
	30mΩ@2.5V			52mΩ@-2.5V	

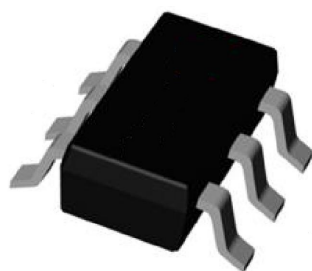
Feature

- Trench Technology
- Supper high density cell design for extremely low $R_{ds(on)}$
- Exceptional ON resistance and maximum DC current capability
- ESD Protected

Application

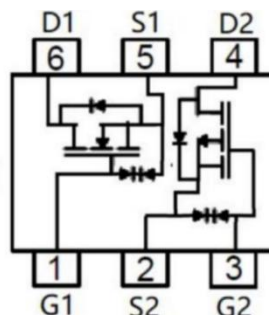
- Driver, Relays
- Power supply converters circuit
- Load/Power Switching for potable device

Package

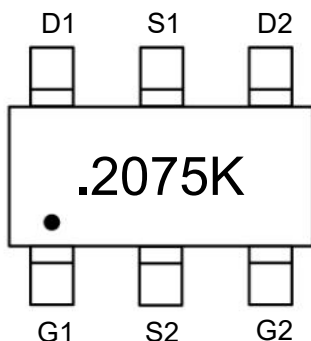


SOT-23-6L

Circuit diagram



Marking



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

Parameter	Symbol	N-Channel	p-Channel	Unit
Drain-Source Voltage	V _{DS}	20	-20	V
Gate-Source Voltage	V _{GS}	±10	±10	V
Continuous Drain Current	I _D	7	-5	A
Pulsed Drain Current	I _{DM}	28	-20	A
Power Dissipation	P _D	1.4	1.4	W
Thermal Resistance from Junction to Ambient	R _{θJA}	96.2	96.2	°C/W
Junction Temperature	T _J	150	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	-55 ~ +150	°C

N-CH Electrical characteristics (TA=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 20V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±10V, V _{DS} = 0V			±10	μA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.5	0.7	1.0	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} = 4.5V, I _D = 4.5A		16	22	mΩ
		V _{GS} = 2.5V, I _D = 3A		21	30	
Dynamic characteristics¹⁾						
Input Capacitance	C _{iss}	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz		411		pF
Output Capacitance	C _{oss}			125		
Reverse Transfer Capacitance	C _{rss}			105		
Total Gate Charge	Q _g	V _{DS} = 10V, V _{GS} = 4.5V, I _D = 3A		7.7		nC
Gate-Source Charge	Q _{gs}			2.6		
Gate-Drain Charge	Q _{gd}			3		
Turn-on delay time	t _{d(on)}	V _{DD} = 10V, V _{GS} = 4.5V, R _G = 3Ω, R _L = 1.5Ω		0.5		nS
Turn-on rise time	t _r			1		
Turn-off delay time	t _{d(off)}			12		
Turn-off fall time	t _f			4		
Source-Drain Diode characteristics						
Diode Forward voltage	V _{SD}	V _{GS} = 0V, I _S = 1.25A			1.2	V

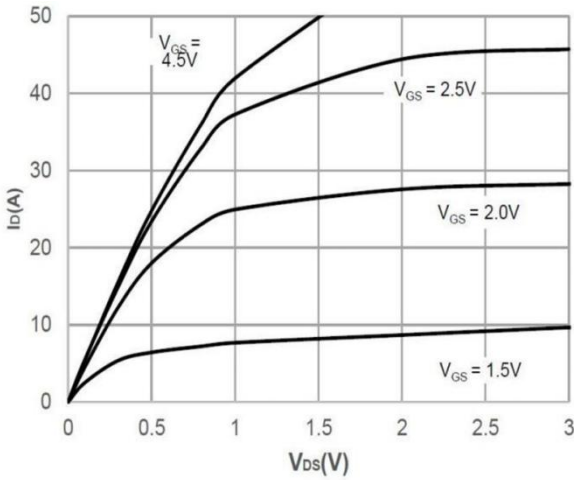
P-CH Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -20V, V _{GS} = 0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±10V, V _{DS} = 0V			±10	μA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.5	-0.7	-1.0	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D = -3A		28	38	mΩ
		V _{GS} = -2.5V, I _D = -2A		37	52	
Dynamic characteristics¹⁾						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} = 0V, f = 1MHz		389		pF
Output Capacitance	C _{oss}			115		
Reverse Transfer Capacitance	C _{rss}			101		
Total Gate Charge	Q _g	V _{DS} = -10V, V _{GS} = -4.5V, I _D = -4A		9		nC
Gate-Source Charge	Q _{gs}			1.1		
Gate-Drain Charge	Q _{gd}			2.3		
Turn-on delay time	t _{d(on)}	V _{DD} = -10V, V _{GEN} = -4.5V, R _L = 1.2Ω, R _{GEN} = 1Ω, I _D = -4A		12		nS
Turn-on rise time	t _r			34		
Turn-off delay time	t _{d(off)}			30		
Turn-off fall time	t _f			10		
Source-Drain Diode characteristics						
Diode Forward voltage	V _{SD}	V _{GS} = 0V, I _S = -1.25A			-1.2	V

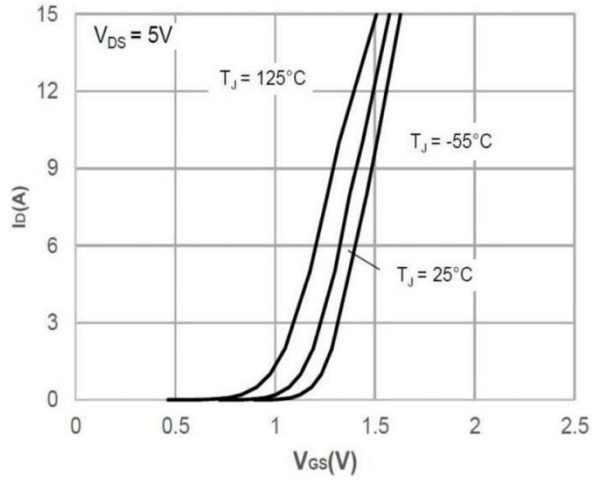
Notes:

1) Guaranteed by design, not subject to production testing.

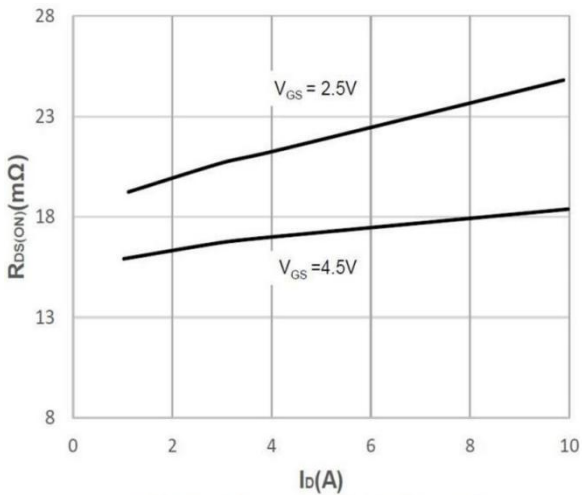
N- Channel Typical Characteristics



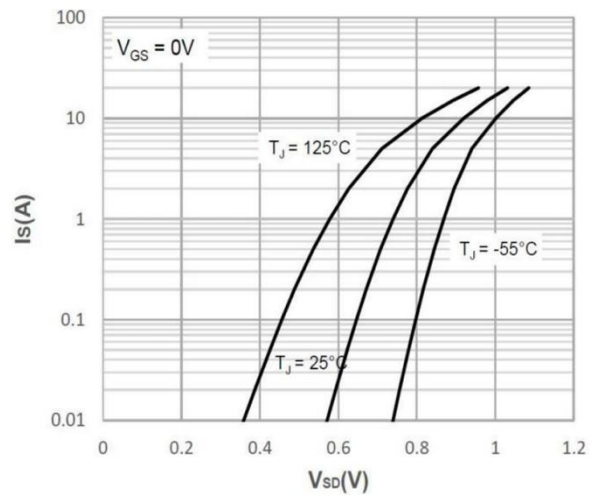
Output Characteristics



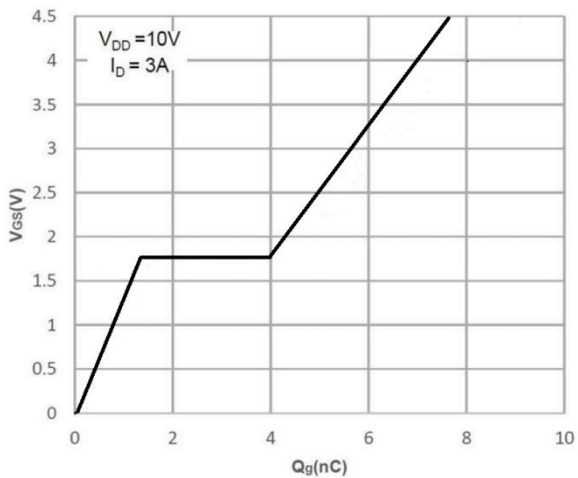
Typical Transfer Characteristics



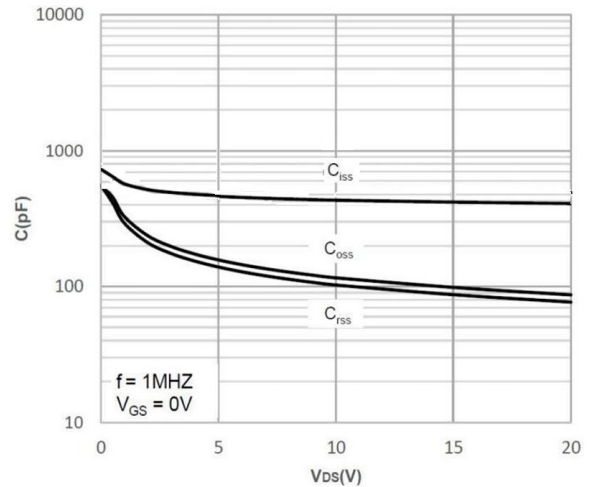
On-resistance vs. Drain Current



Body Diode Characteristics

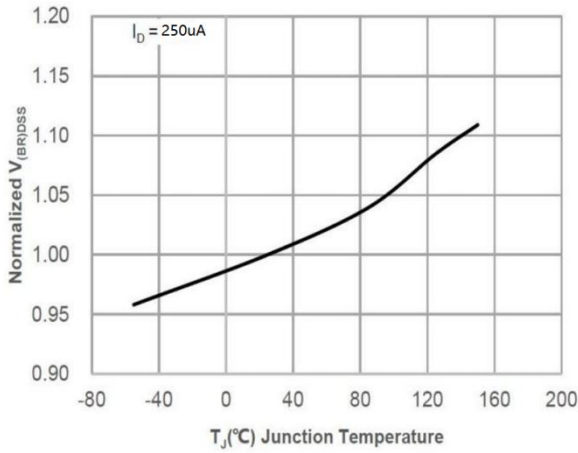


Gate Charge Characteristics

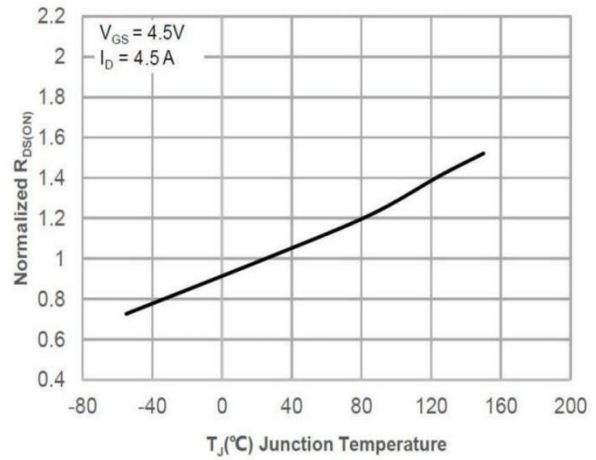


Capacitance Characteristics

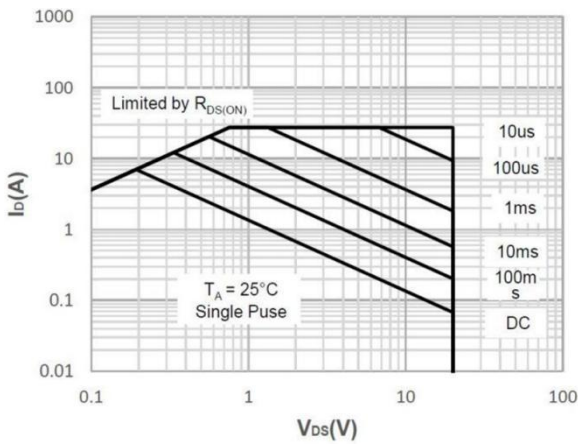
N- Channel Typical Characteristics



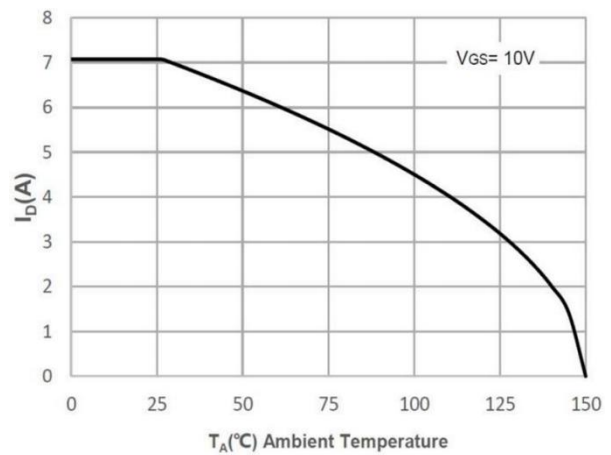
Normalized Breakdown voltage vs. Junction Temperature



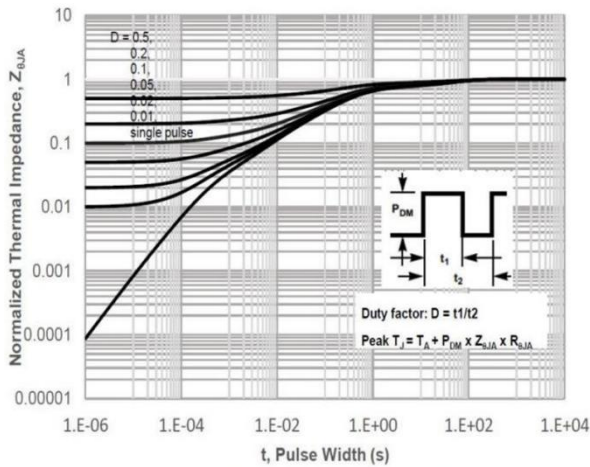
Normalized on Resistance vs. Junction Temperature



Maximum Safe Operating Area

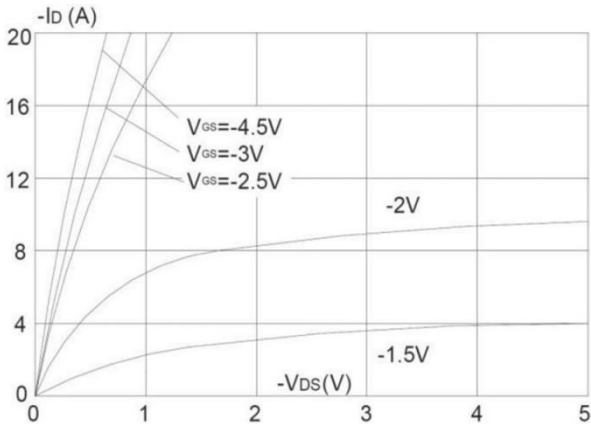


Maximum Continuous Drain Current vs. Ambient Temperature

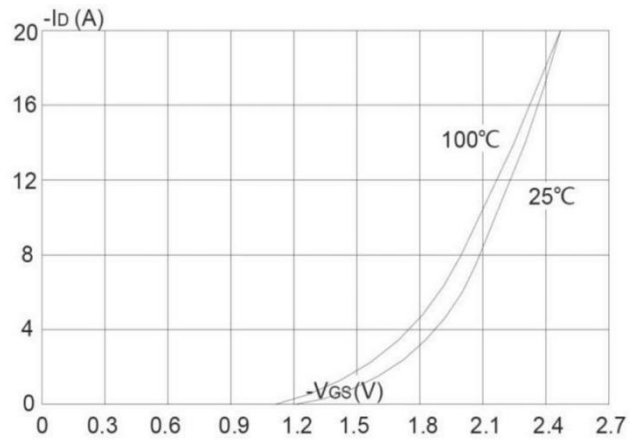


Normalized Maximum Transient Thermal Impedance

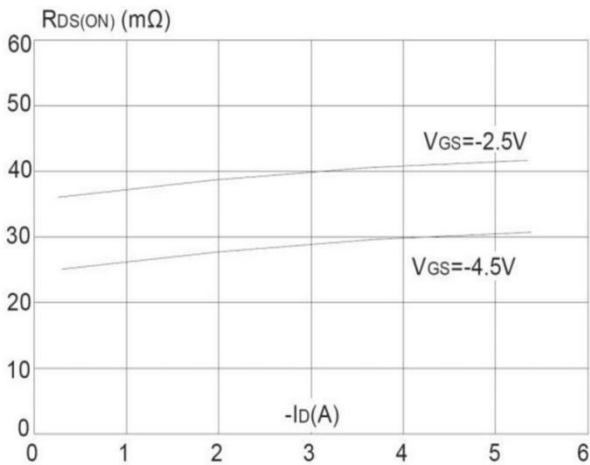
P- Channel Typical Characteristics



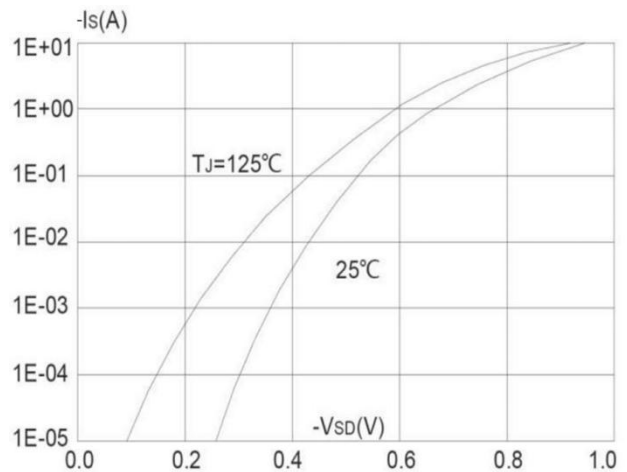
Output Characteristics



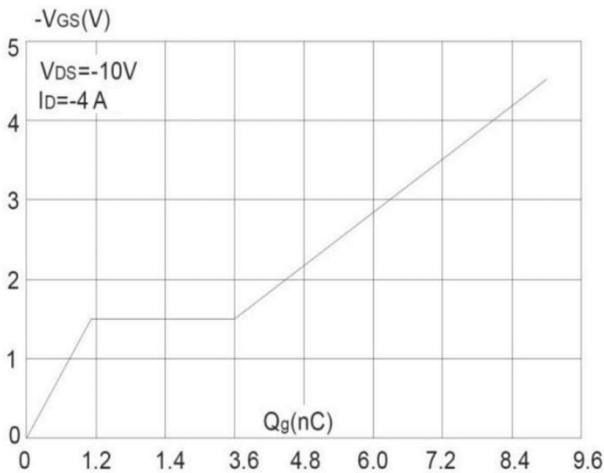
Typical Transfer Characteristics



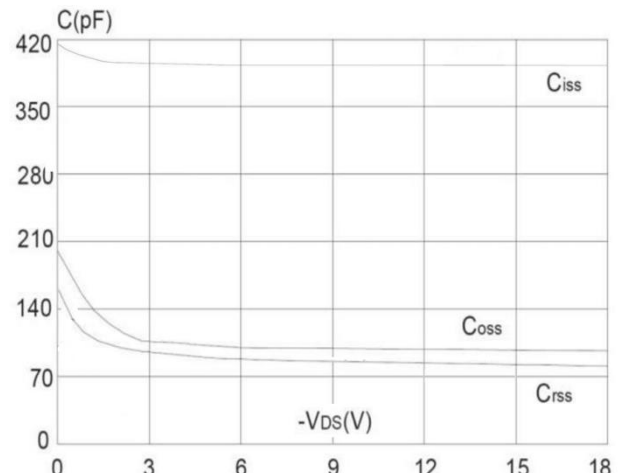
On-resistance vs. Drain Current



Body Diode Characteristics

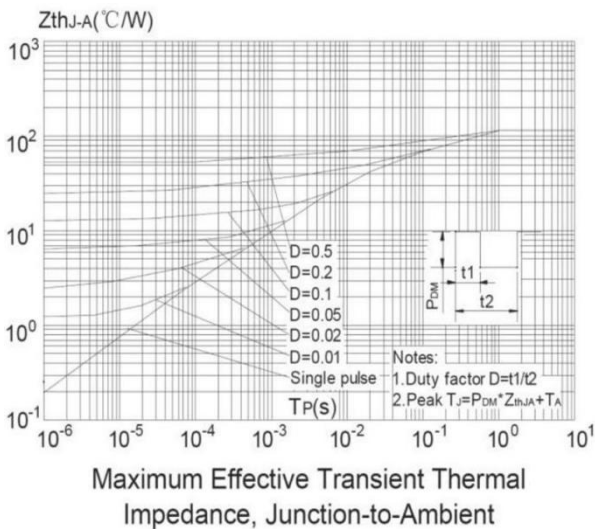
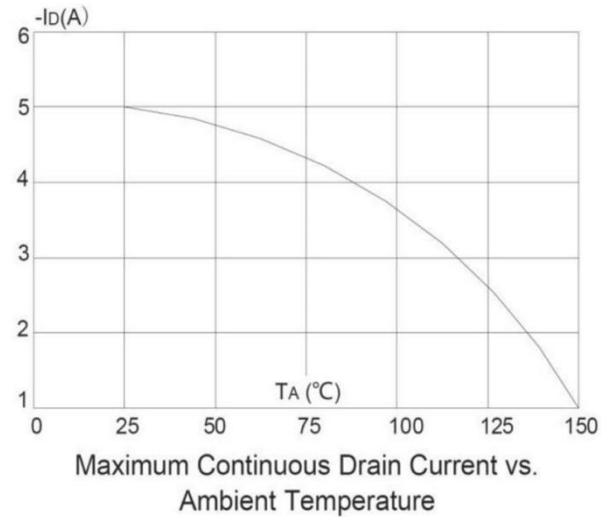
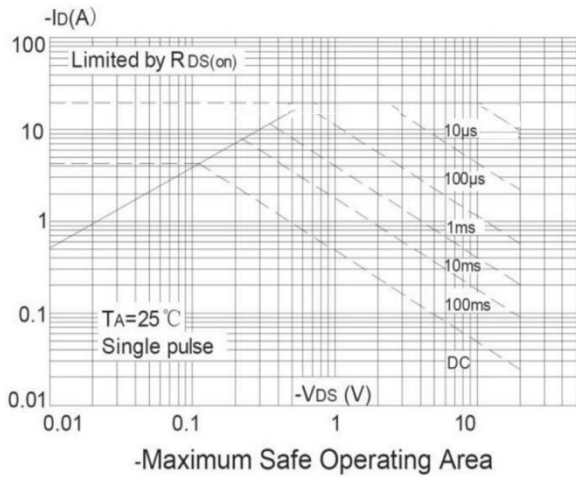
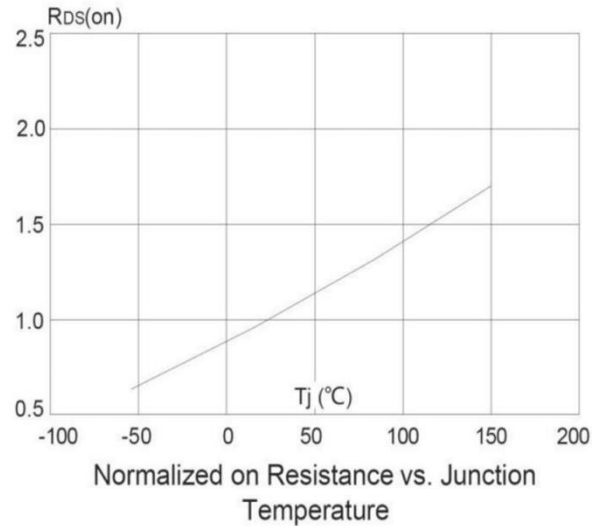
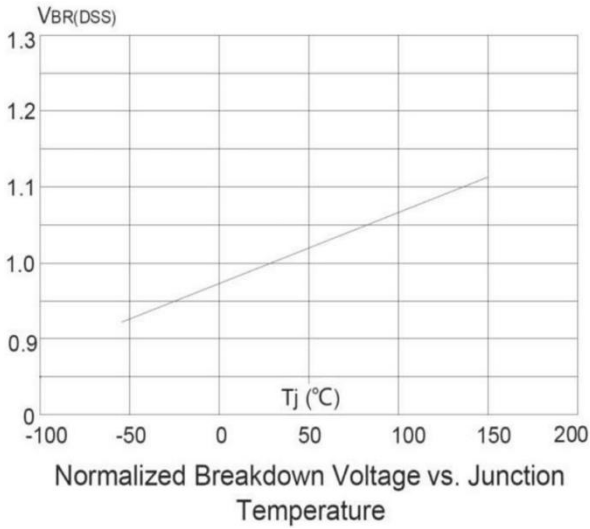


Gate Charge Characteristics

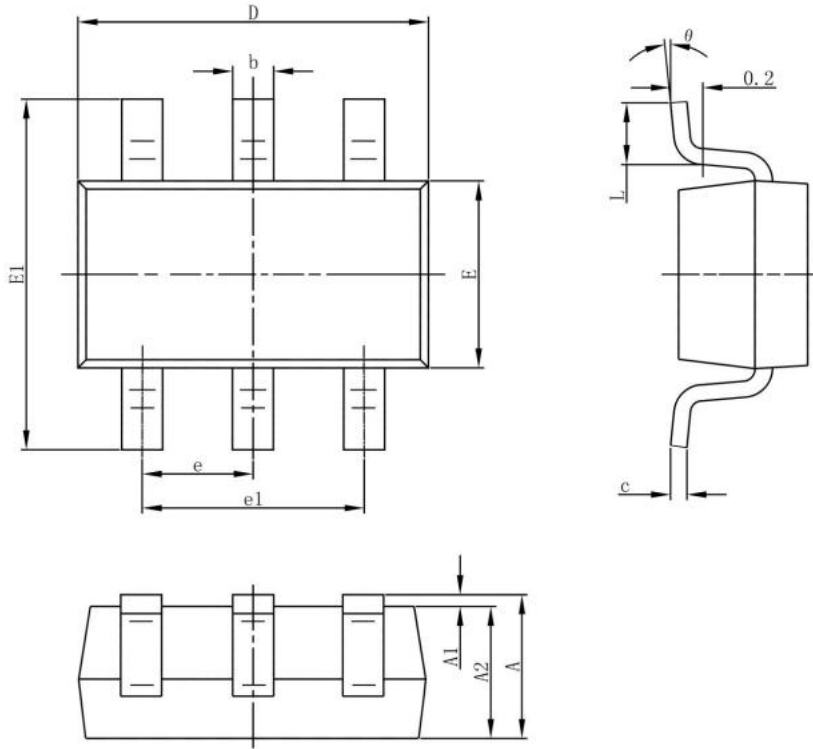


Capacitance Characteristics

P- Channel Typical Characteristics



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
E1	2.650	2.950	0.104	0.116
E	1.500	1.700	0.059	0.067
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°