

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	23mΩ@10V	7A
	30mΩ@4.5V	
-60V	30mΩ@-10V	-10A
	35mΩ@-4.5V	

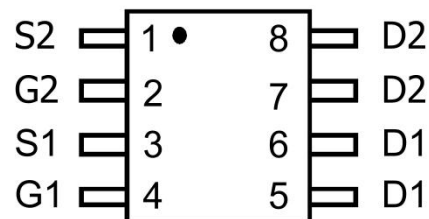
Feature

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge
- Fast Switching Speed

Application

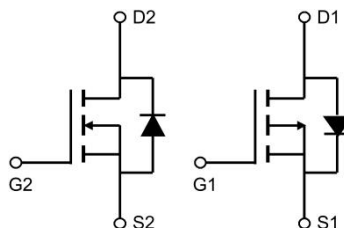
- Motor Control
- DC-DC Converters
- Power Management

Package

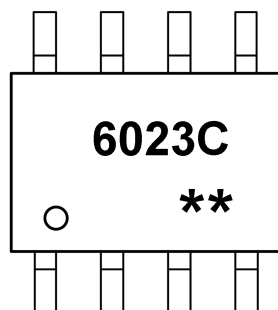


SOP-8L

Circuit diagram



Marking



6023C = Device code

** = Week Code

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

Parameter	Symbol	Value		Unit
		N-Channel	P-Channel	
Drain-Source Voltage	V_{DS}	60	-60	V
Gate-Source Voltage	V_{GS}	± 20	± 20	V
Continuous Drain Current	I_D	7	-10	A
Power Dissipation	P_D	1.5	3.6	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	83	34	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	150		$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +150		$^{\circ}\text{C}$

N-Channel 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}	VGS = 0V, ID = 250μA	60	-	-	V
Zero gate voltage drain current	IDSS	VDS = 80V,VGS = 0V	-	-	1	μA
Gate-body leakage current	IGSS	VGS =±20V, VDS = 0V	-	-	±0.1	μA
Gate threshold voltage	VGS(th)	VDS =VGS, ID = 250μA	1.0	1.6	2.5	V
Drain-source on-resistance	RDS(on)	VGS = 10V, ID = 2A	-	23	29	mΩ
		VGS = 4.5V, ID = 1A	-	30	40	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=15V , VGS=0V , f=1MHz	-	1640	-	pF
Output Capacitance	Coss		-	120	-	
Reverse Transfer Capacitance	Crss		-	126	-	
Switching Characteristics						
Total gate charge	Qg	VDS=48V , VGS=4.5V , ID=10A	-	42	-	nC
Gate-source charge	Qgs		-	8	-	
Gate-drain charge	Qgd		-	11.5	-	
Turn-on delay time	td(on)	VDD=30V , VGS=10V , RG=3.3W, ID=10A	---	9	-	ns
Turn-on rise time	tr		---	10.5	-	
Turn-off delay time	td(off)		---	36	-	
Turn-off fall time	tf		---	5	-	
Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	v

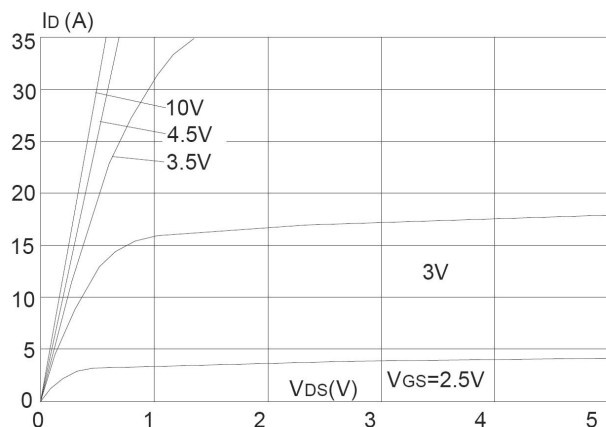
**P-Channel Electrical characteristics (T_A=25 °C, unless otherwise noted)**

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =-250μA	-60	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -80V, V _{GS} = 0V	-	-	-1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.7	-2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-2A	-	30	38	mΩ
		V _{GS} =-4.5V, I _D =-1A	-	35	47	
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V, f = 1MHz	-	2417	-	pF
Output Capacitance	C _{oss}		-	179	-	
Reverse Transfer Capacitance	C _{rss}		-	120	-	
Switching Characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =-30V, R _L = 4.7Ω V _{GEN} =-10V, R _{GEN} = 3Ω	-	9.8	-	ns
Turn-on rise time	t _r		-	6.1	-	
Turn-off delay time	t _{d(off)}		-	44	-	
Turn-off fall time	t _f		-	12.7	-	
Total gate charge	Q _g	V _{DS} =-30V, V _{GS} =-10V, I _D =-6.2A	-	46.5	-	nC
Gate-source charge	Q _{gs}		-	9.1	-	
Gate-drain charge	Q _{gd}		-	9.2	-	
Source-Drain Diode Characteristics						
Body Diode Voltage	V _{SD}	I _S =-1A, V _{GS} = 0V	-	-	-1.2	V

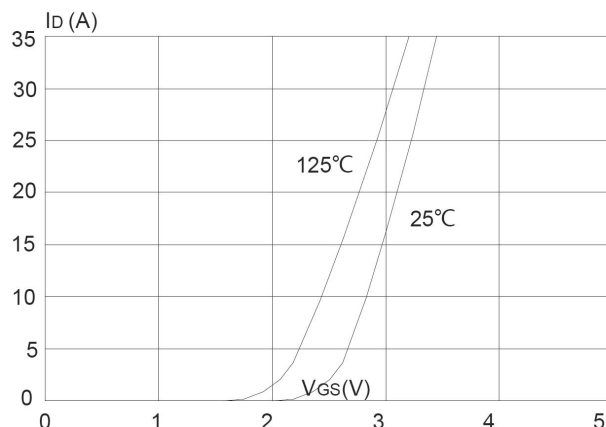


N-Channel Typical Characteristics

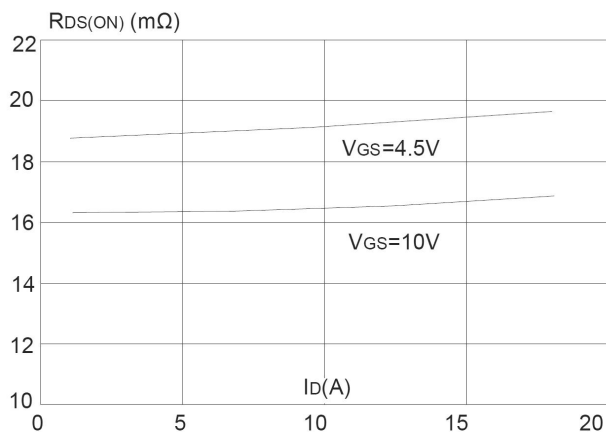
Output Characteristics



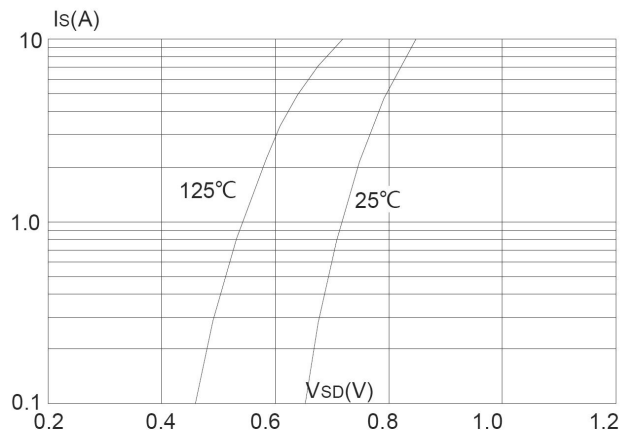
Typical Transfer Characteristics



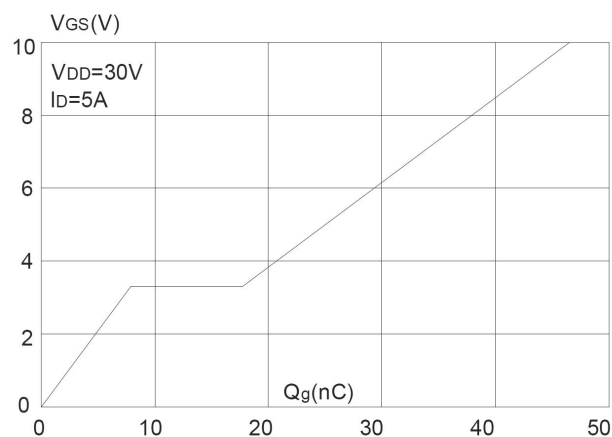
On-resistance vs. Drain Current



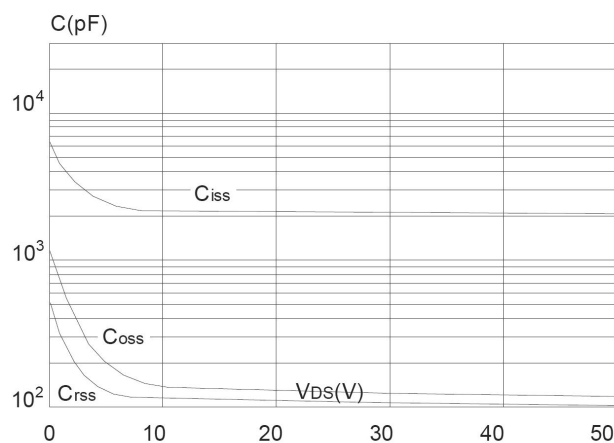
Body Diode Characteristics



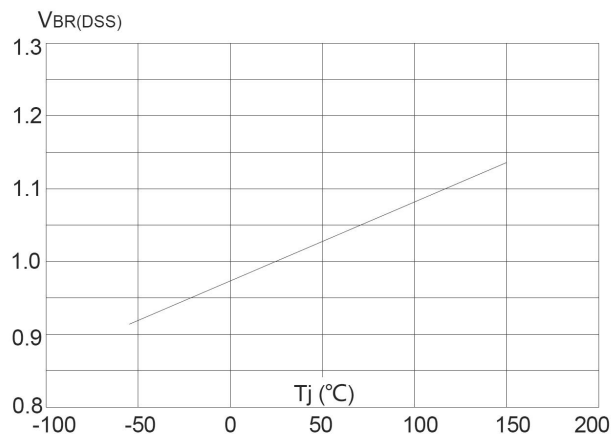
Gate Charge Characteristics



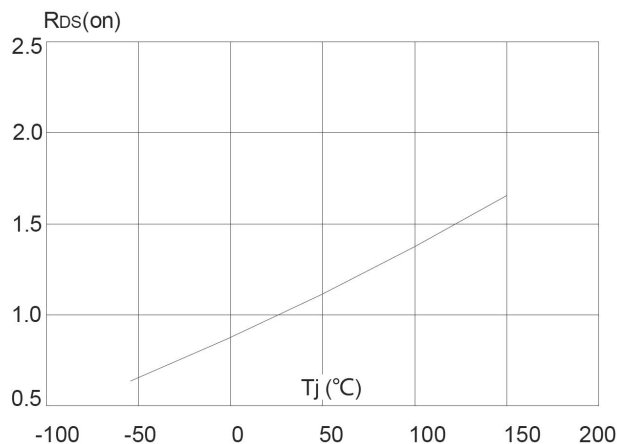
Capacitance Characteristics



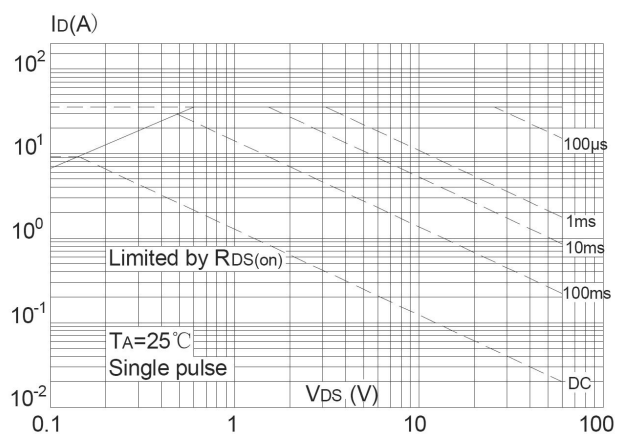
Normalized Breakdown Voltage vs. Junction Temperature



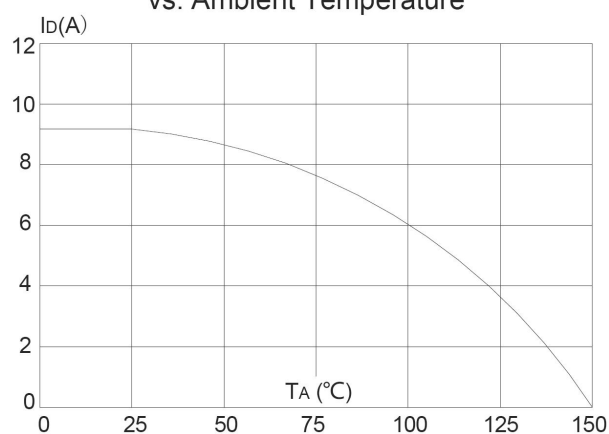
Normalized on Resistance vs. Junction Temperature



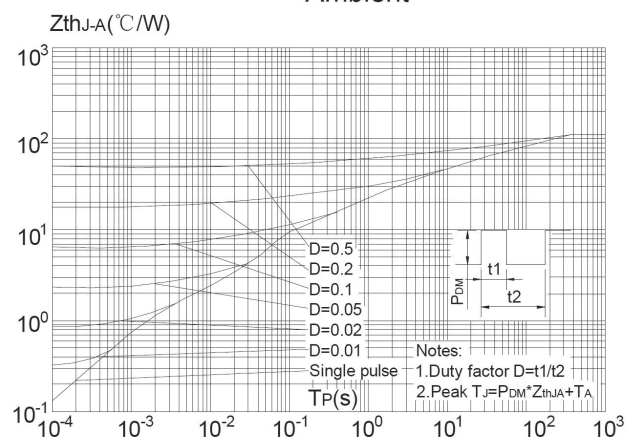
Maximum Safe Operating Area



Maximum Continuous Drain Current vs. Ambient Temperature



Maximum Effective Transient Thermal Impedance, Junction-to-Ambient





P-Channel Typical Characteristics

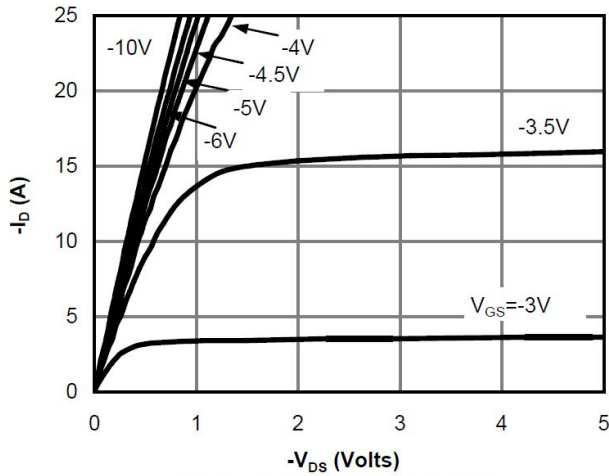


Fig 1: On-Region Characteristics

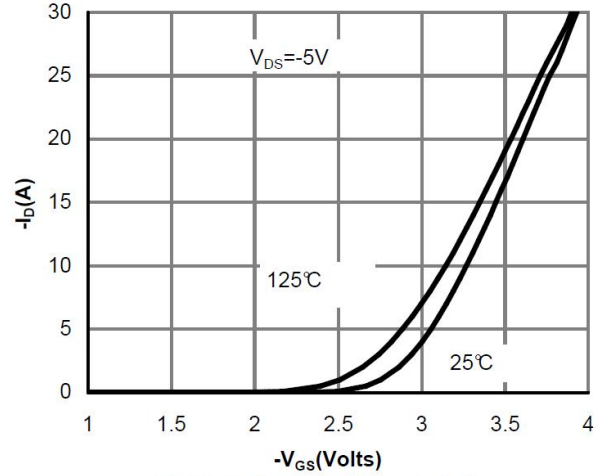


Figure 2: Transfer Characteristics

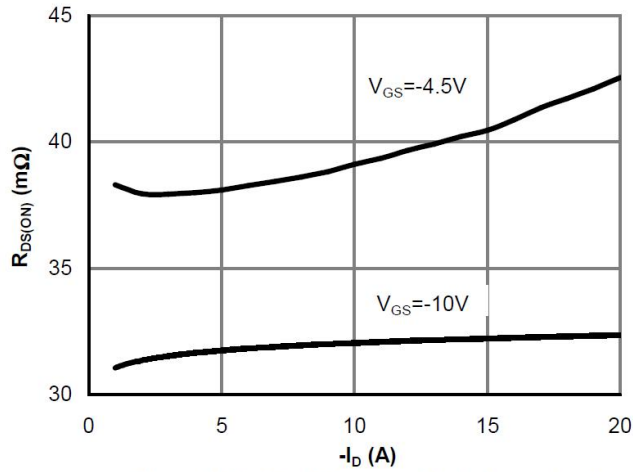


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

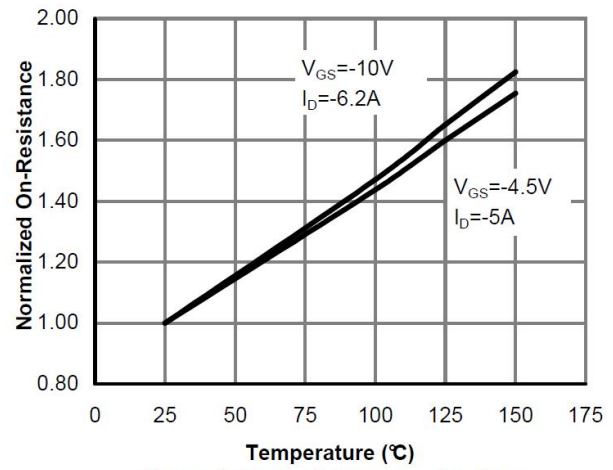


Figure 4: On-Resistance vs. Junction Temperature

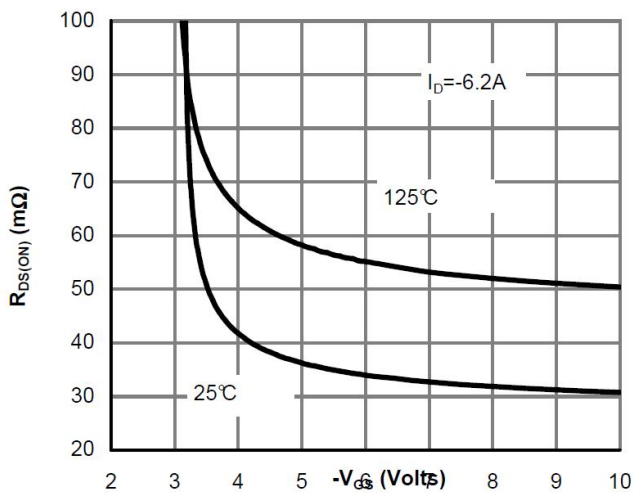


Figure 5: On-Resistance vs. Gate-Source Voltage

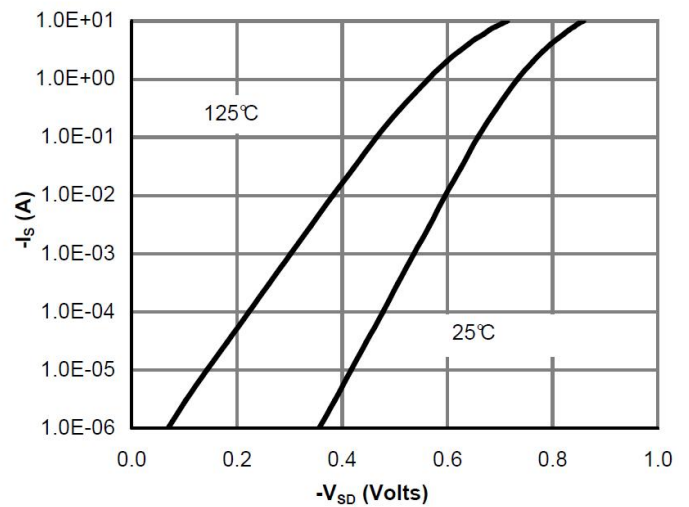
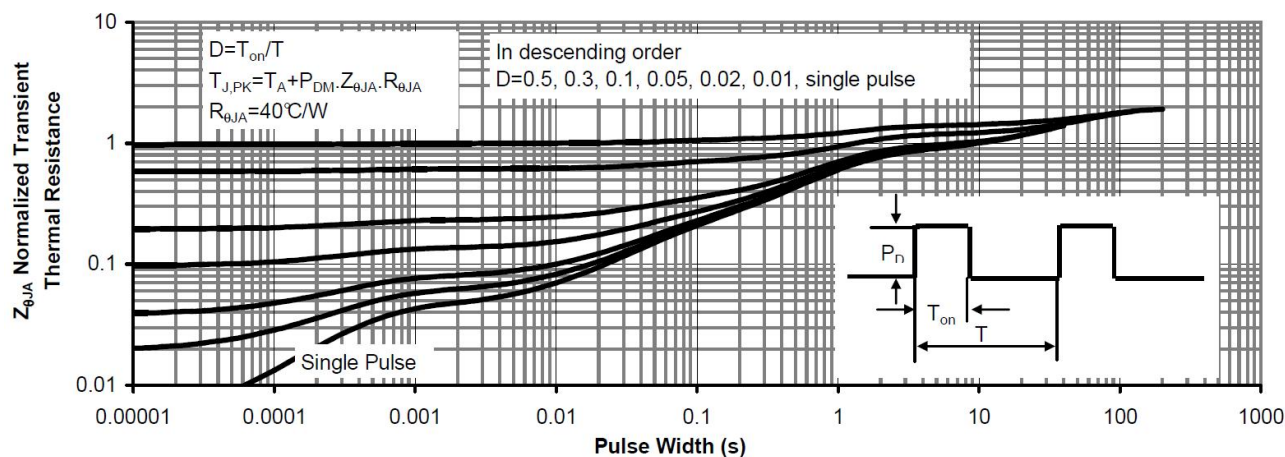
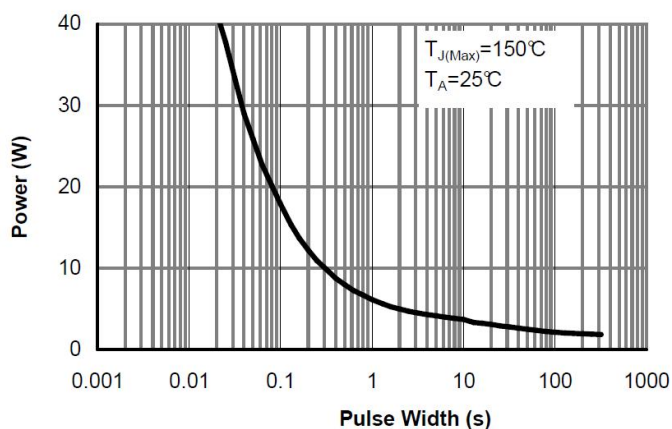
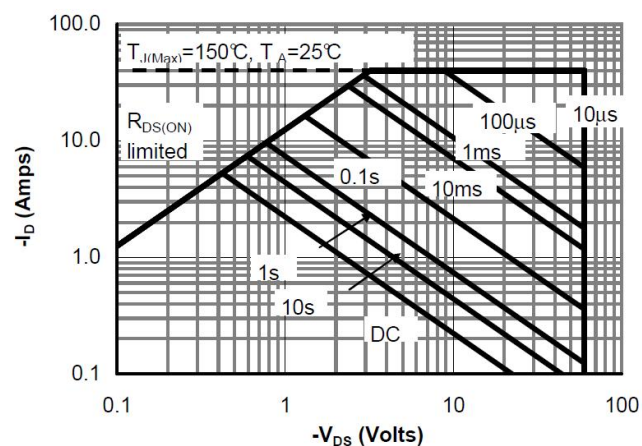
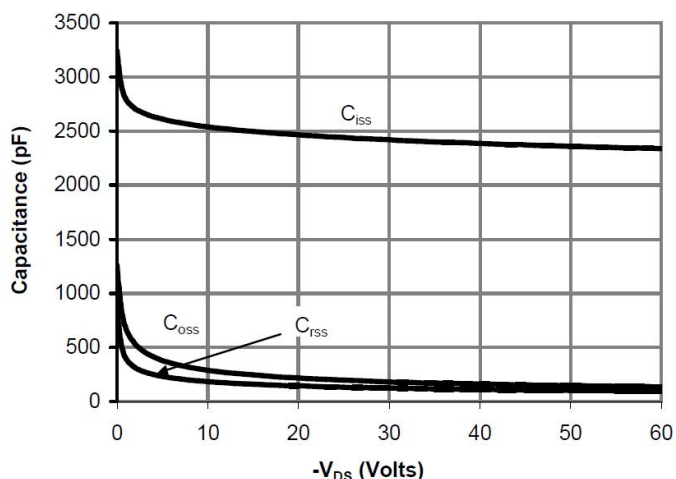
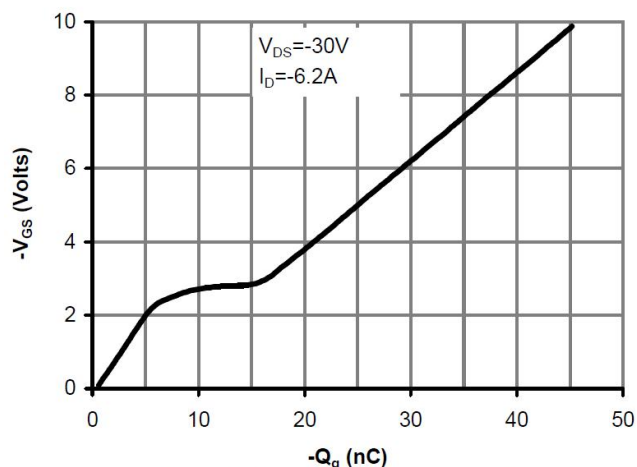
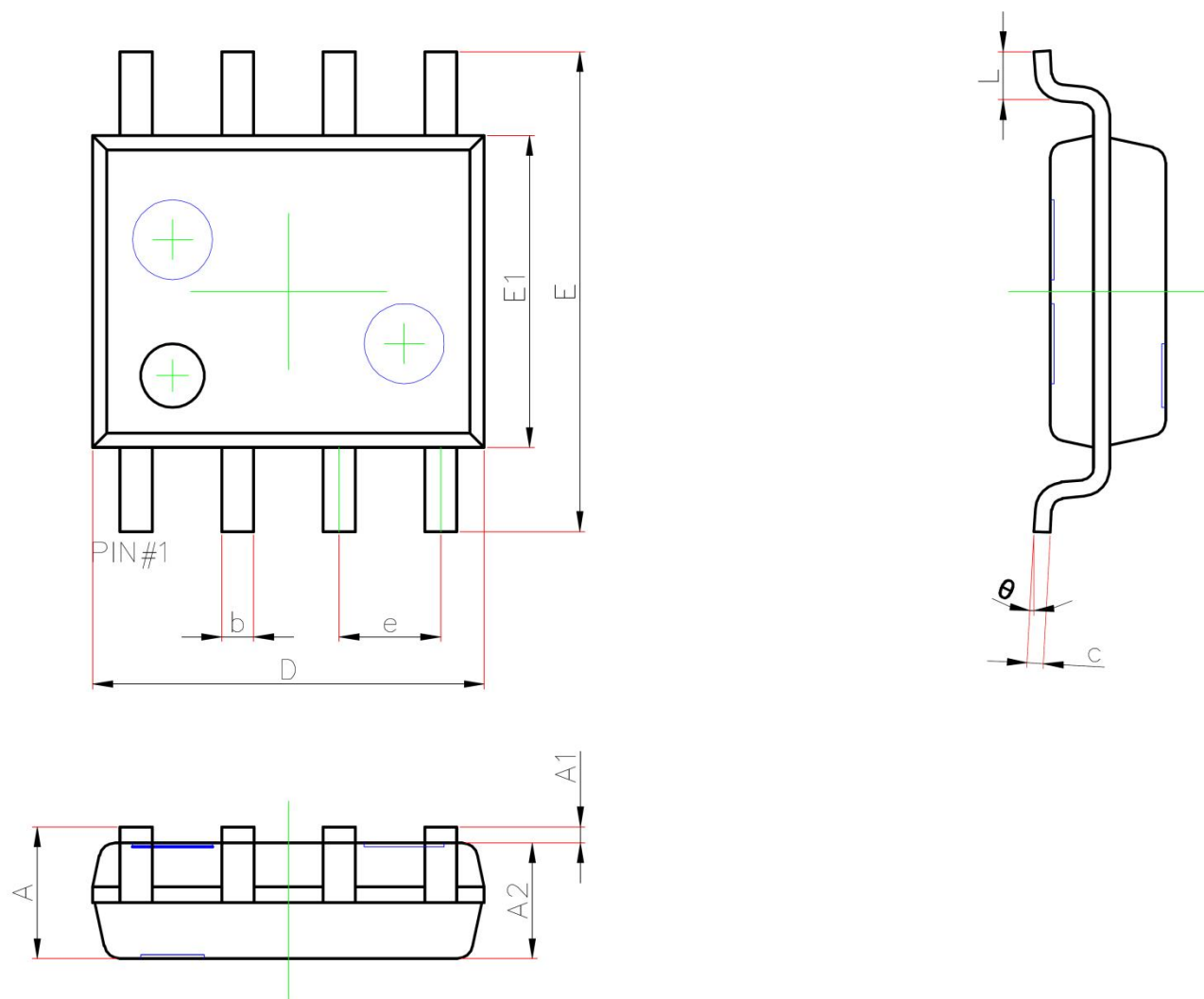


Figure 6: Body-Diode Characteristics



SOP-8L Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
A2	1.35	1.55
b	0.33	0.51
c	0.17	0.25
D	4.80	5.00
e	1.27 REF.	
E	5.80	6.20
E1	3.80	4.00
L	0.40	1.27
θ	0°	8°