SP010N06BGTQ

100V N-Channel Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	6.5mΩ@10V	110A
	8.1mΩ@4.5V	

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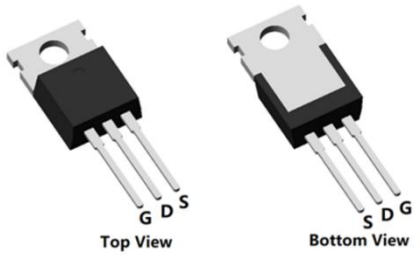
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

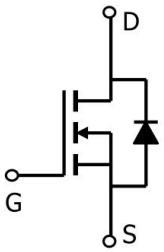
- Power switching application
- Battery management
- Uninterruptible power supply

Package

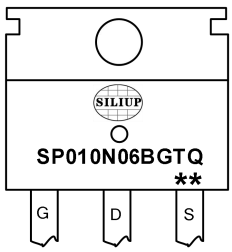


TO-220-3L-C(1:G 2:D 3:S)

Circuit diagram



Marking



SP010N06BGTQ : Product code
**** : Week code**

Order Information

Device	Package	Unit/Tube
SP010N06BGTQ	TO-220-3L	50

Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Tc=25℃)	I_D	110	A
Continuous Drain Current (Tc=100℃)	I_D	73	A
Pulsed Drain Current	I_{DM}	440	A
Single Pulse Avalanche Energy[1]	E_{AS}	256	mJ
Power Dissipation (Tc=25℃)	P_D	125	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1	℃/W
Storage Temperature Range	T_{STG}	55 to 150	℃
Operating Junction Temperature Range	T_J	55 to 150	℃

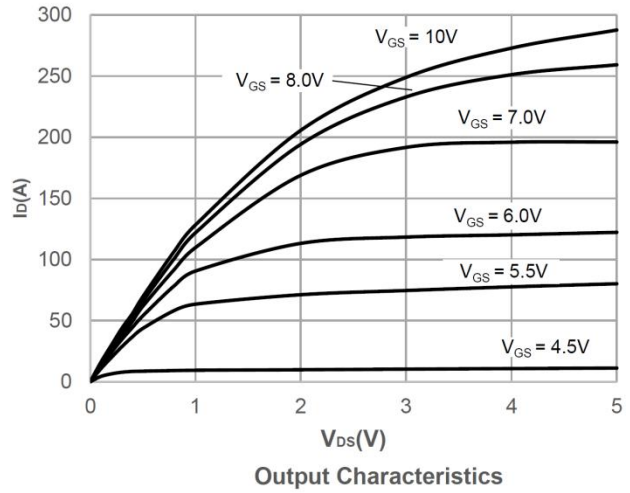
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250μA, V_{GS} = 0V	100	-	-	V
Drain Cut-Off Current	I_{DSS}	V_{DS} = 80V, V_{GS} = 0V	-	-	1	uA
Gate 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	1.0	1.7	2.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 40A	-	6.5	8.2	mΩ
		V_{GS} = 4.5V, I_D = 30A	-	8.1	10.0	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} = 0V, f = 1.0MHz	-	2312	-	pF
Output Capacitance	C_{oss}		-	729	-	
Reverse Transfer Capacitance	C_{rss}		-	25.6	-	
Total Gate Charge	Q_g	V_{DS}=50V , VGS=10V , ID=50A	-	60	-	nC
Gate-Source Charge	Q_{gs}		-	21	-	
Gate-Drain Charge	Q_{gd}		-	14	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{GS} = 10V, V_{DS} =50V, ID=50A R_G = 4.7Ω	-	17.6	-	nS
Rise Time	t_r		-	21	-	
Turn-Off Delay Time	$t_{d(off)}$		-	31	-	
Fall Time	t_f		-	10.6	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	110	A
Reverse Recovery Time	Trr	I_S=20A, di/dt=100A/us, T_J=25℃	-	51	-	nS
Reverse Recovery Charge	Qrr		-	85	-	nC

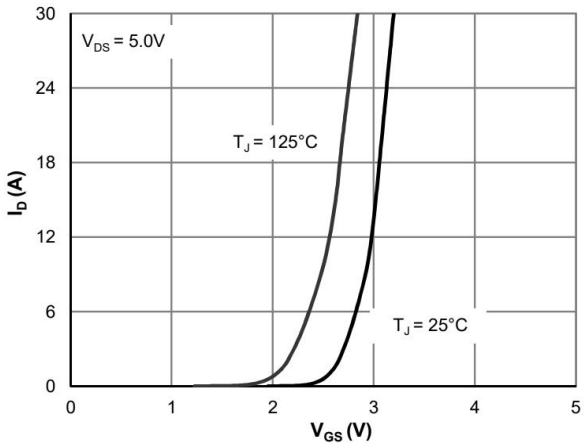
Note：

1. The EAS test condition is VDD=50V,VGS=10V,L=0.5mH,RG=25Ω

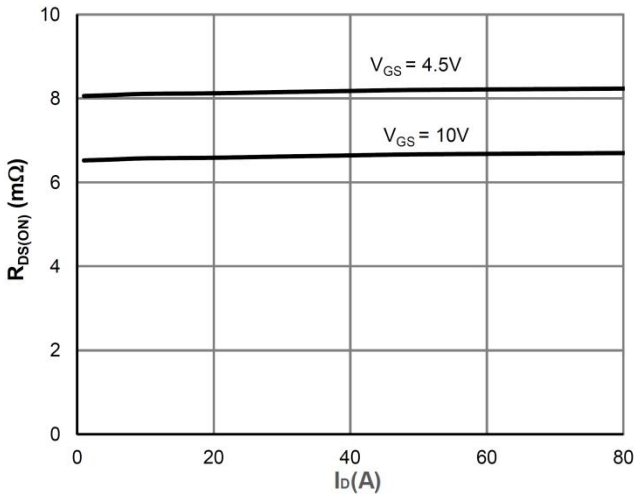
Typical Characteristics



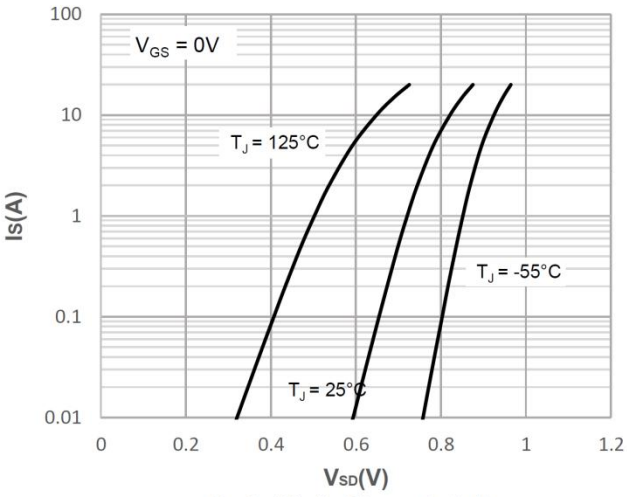
Output Characteristics



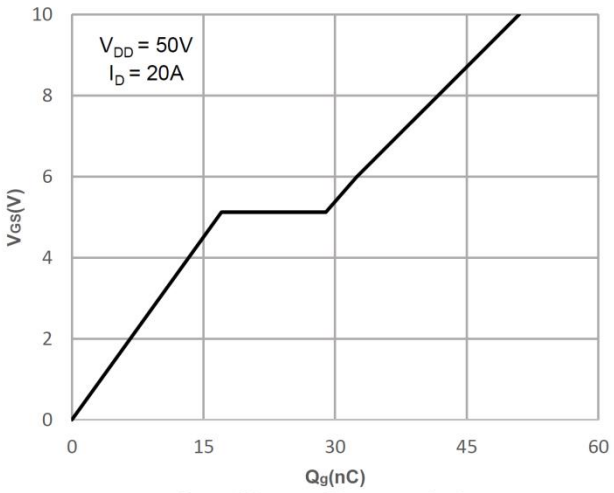
Typical Transfer Characteristics



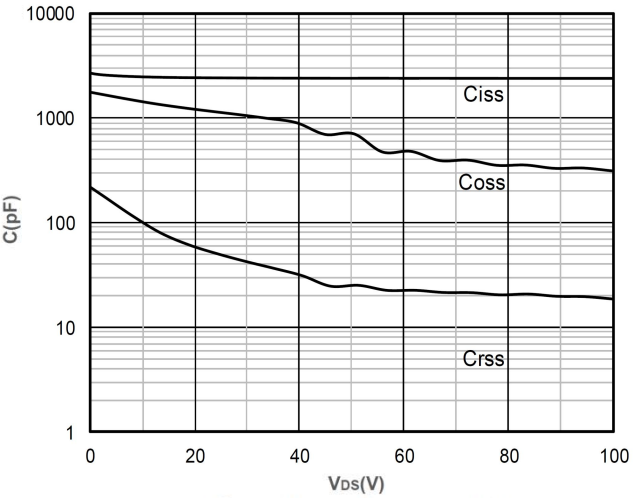
On-resistance vs. Drain Current



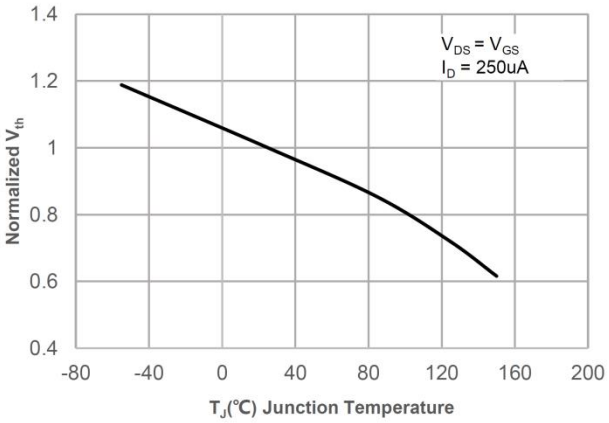
Body Diode Characteristics



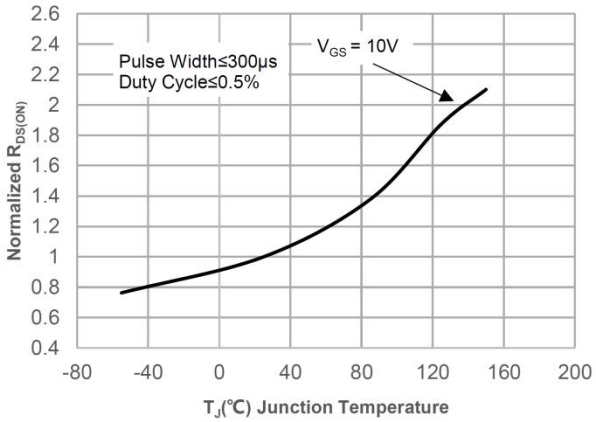
Gate Charge Characteristics



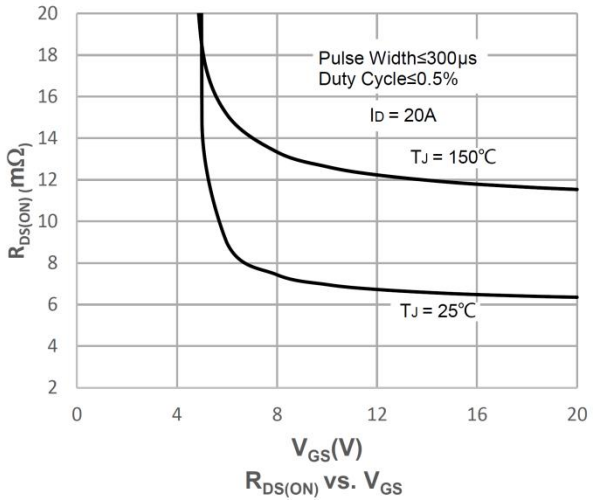
Capacitance Characteristics



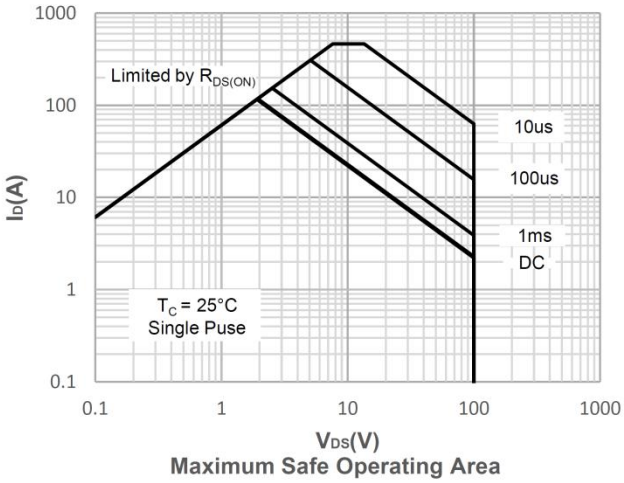
Normalized Threshold Voltage vs. Junction Temperature



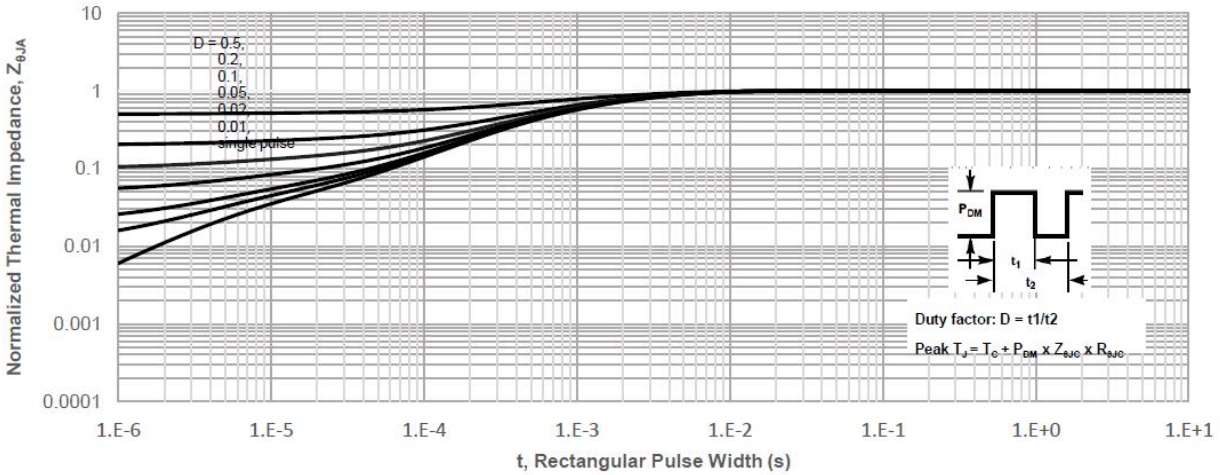
Normalized on Resistance vs. Junction Temperature



$R_{DS(ON)}$ vs. V_{GS}

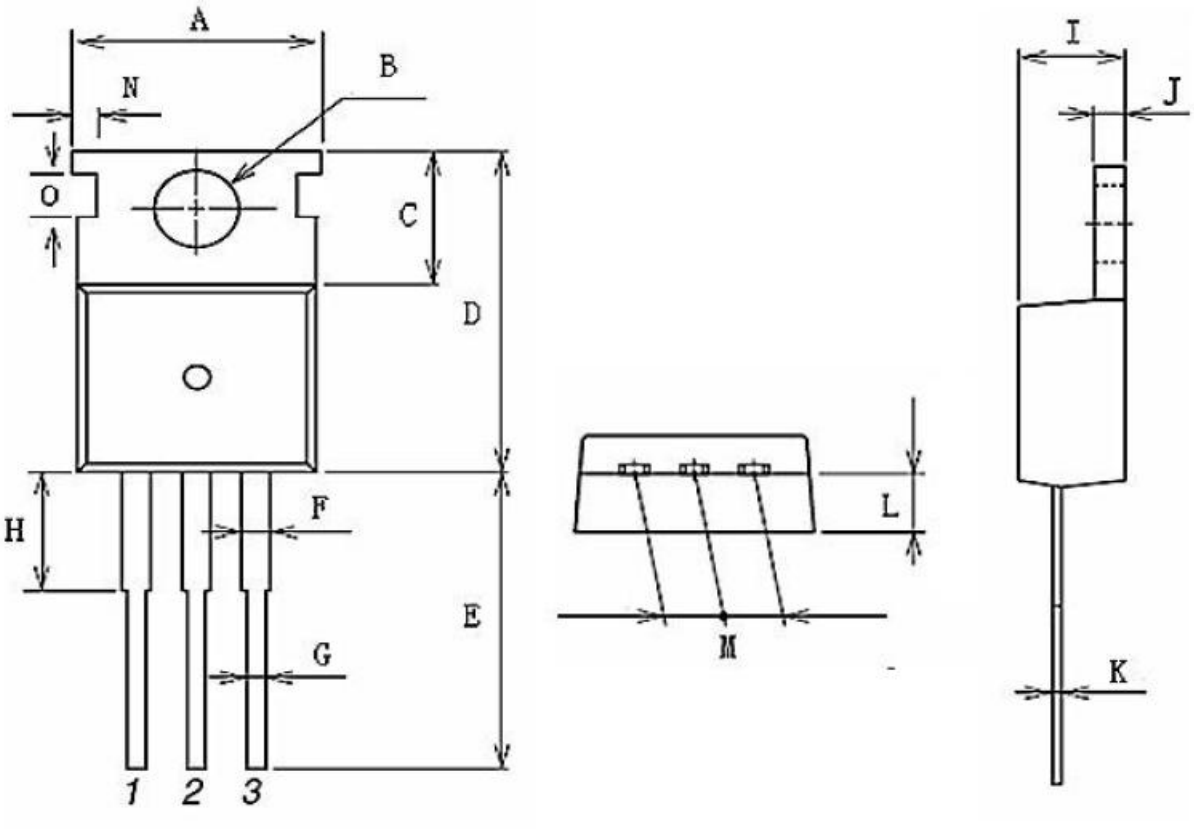


Maximum Safe Operating Area



Normalized Maximum Transient Thermal Impedance

TO-220-3L Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	9.85	10.15
B	3.60	3.70
C	6.35	6.55
D	15.55	15.95
E	12.85	13.15
F	1.17	1.37
G	0.70	0.90
H	2.30	2.70
I	4.40	4.60
J	1.20	1.40
K	0.40	0.60
L	2.23	2.53
M	4.98	5.18
N	0.55	0.75
O	1.62	1.82