SP012N03BGHTD

120V N-Channel Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
120V	3.7mΩ@10V	110A

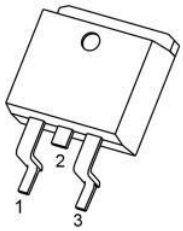
Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

Applications

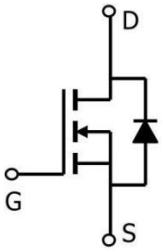
- Power switching application
- DC-DC Converter
- Power Management

Package

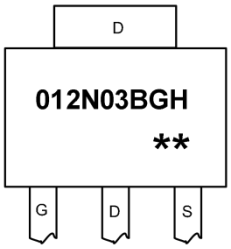


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



012N03BGH : Product code
**** : Week code**

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

Parameter	Symbol	Rating	Unit
Drain source voltage	V_{DS}	120	V
Gate source voltage	V_{GS}	±20	V
Continuous drain current(Tc=25℃)	I_D	110	A
Pulsed drain current	I_{DM}	440	A
Power dissipation(Tc=25℃)	P_D	220	W
Single pulsed avalanche energy1)	E_{AS}	1296	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	0.57	℃/W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	℃

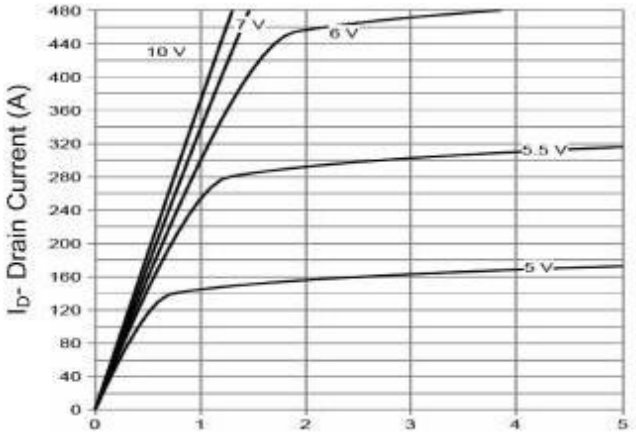
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250μA, V_{GS} = 0V	120	-	-	V
Drain Cut-Off Current	I_{DSS}	V_{DS} = 96V, V_{GS} = 0V	-	-	1	μA
Gate Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V	-	-	±0.1	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0	3.0	4.0	V
Drain-Source ON Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 50A	-	3.7	4.7	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} =60V, V_{GS} = 0V, f = 1.0MHz	-	8505	-	pF
Output Capacitance	C_{oss}		-	620	-	
Reverse Transfer Capacitance	C_{rss}		-	71	-	
Switching Characteristics						
Total Gate Charge	Q_g	VDS=60V , VGS=10V , ID=50A	-	152	-	nC
Gate-Source Charge	Q_{gs}		-	43	-	
Gate-Drain Charge	Q_{gd}		-	46	-	
Turn-On Delay Time	$t_{d(on)}$	V_{GS} = 10V, V_{DS} =50V, ID=50A , R_G = 1.6Ω	-	25	-	ns
Rise Time	t_r		-	15	-	
Turn-Off Delay Time	$t_{d(off)}$		-	52	-	
Fall Time	t_f		-	18	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 1A, V_{GS} = 0V	-	-	1.2	V

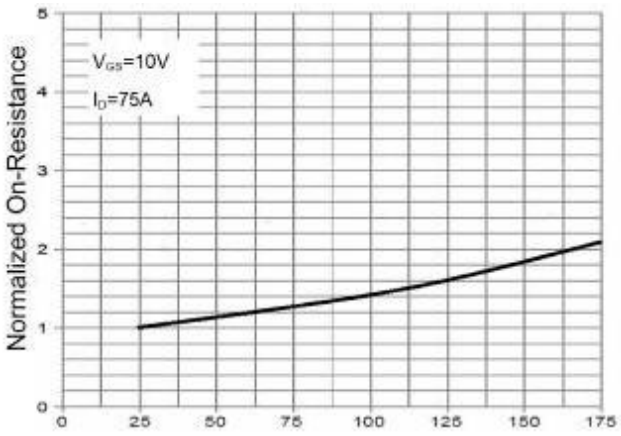
Note:

1. E_{AS} is tested at starting Tj = 25℃, V_{DD}=75V,V_{GS} = 10V,L = 0.5mH,Rg=25Ω;

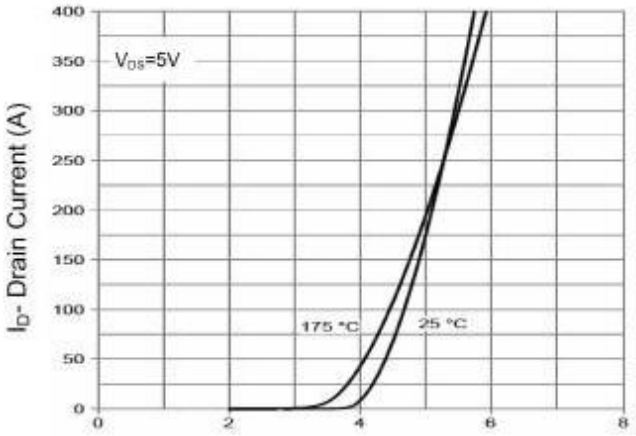
Typical Characteristics



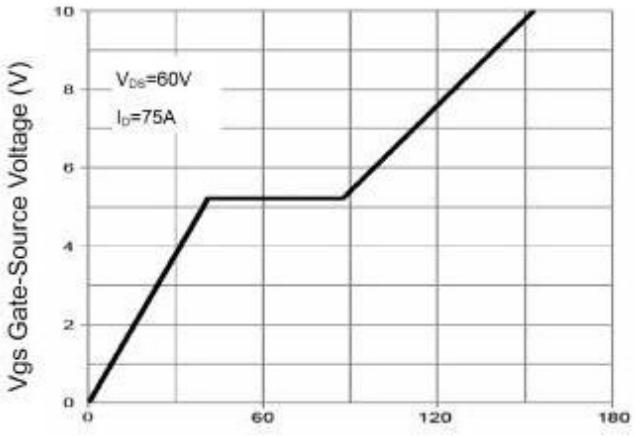
Output Characteristics



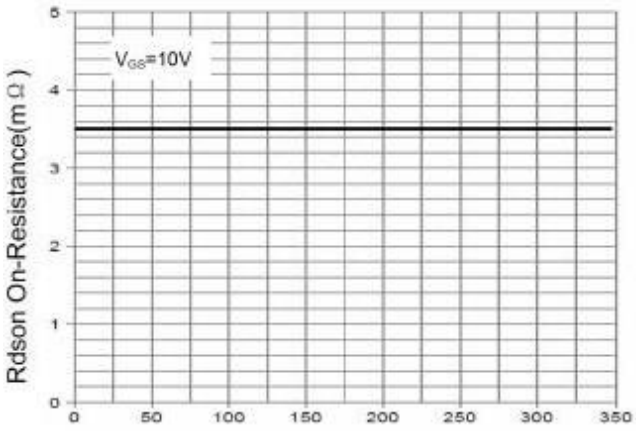
Rdson-Junction Temperature



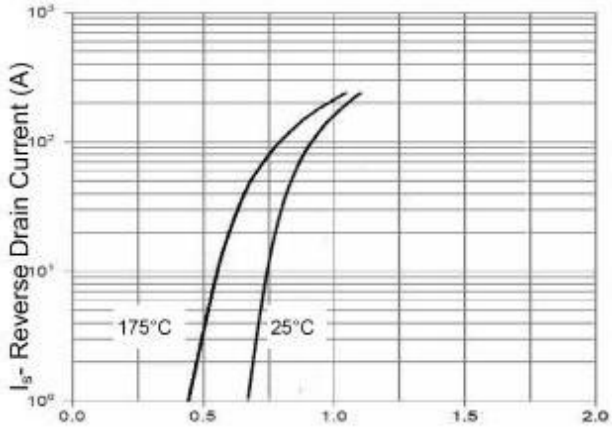
Transfer Characteristics



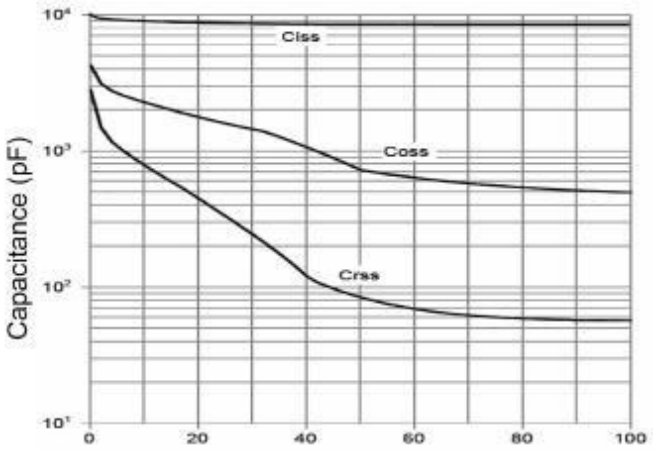
Gate Charge



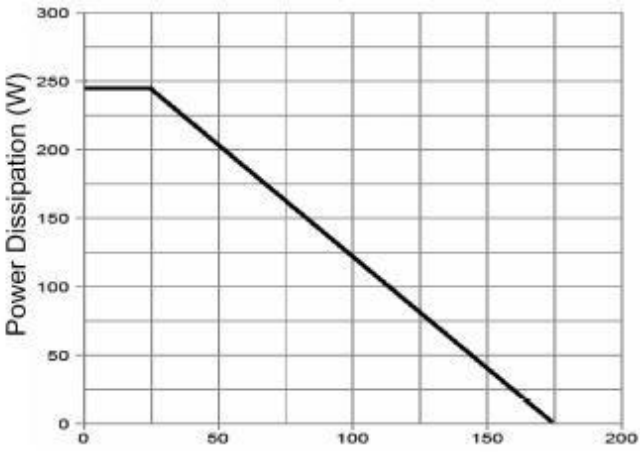
Rdson- Drain Current



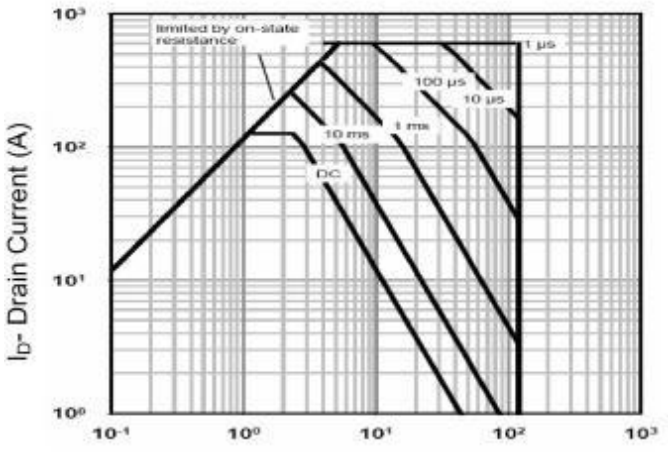
Source- Drain Diode Forward



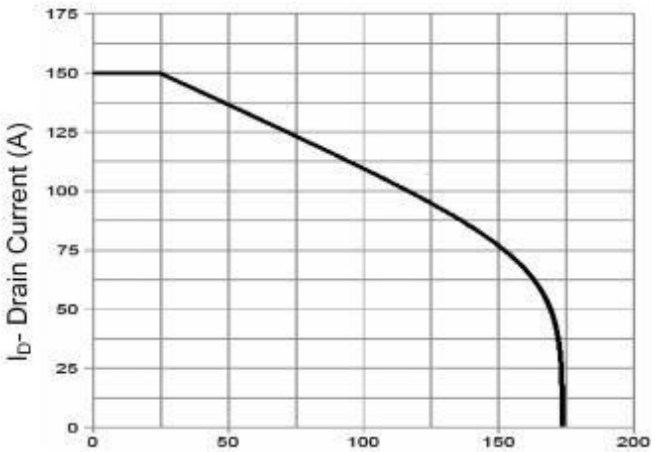
Capacitance vs Vds



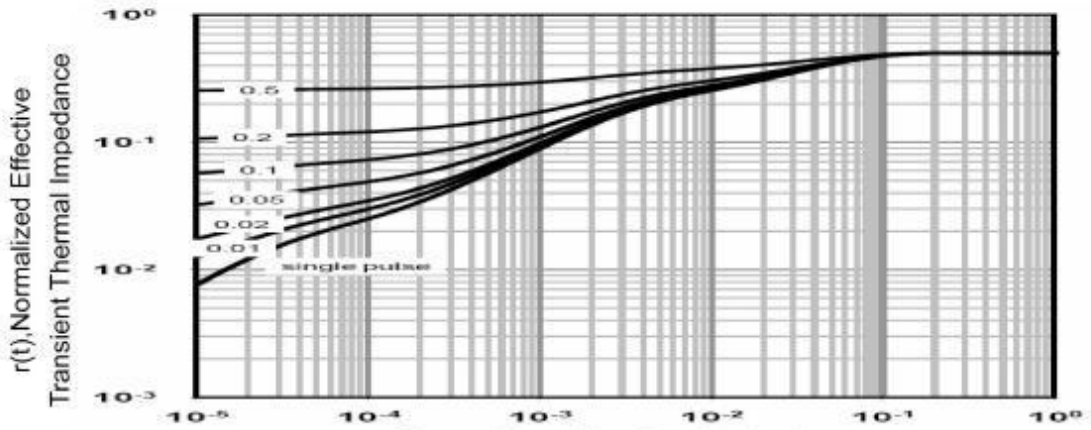
Power De-rating



Safe Operation Area



Current De-rating



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