

Product Summary

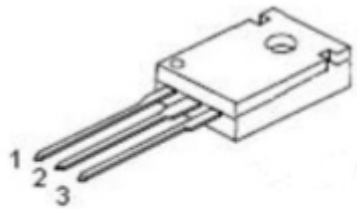
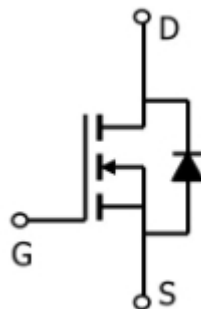
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
120V	3.5mΩ@10V	120A

Feature

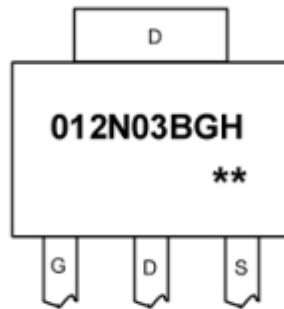
- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Applications

- High Speed Power switching
- DC-DC Converter
- Power Management

Package**TO-247(1:G 2:D 3:S)****Circuit diagram**

Marking



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

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	120	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous drain current (T _C = 25°C)	I _D	120	W
Pulsed Drain Current ²	I _{DM}	480	A
Power Dissipation ⁴ (T _C = 25°C)	P _D	240	W
Single Pulse Avalanche Energy ¹	E _{AS}	1296	mJ
Thermal Resistance Junction- Case	R _{θJC}	0.52	°C/ W
Operation and storage temperature	T _{STG} , T _J	-55~ +150	°C

Electrical characteristics

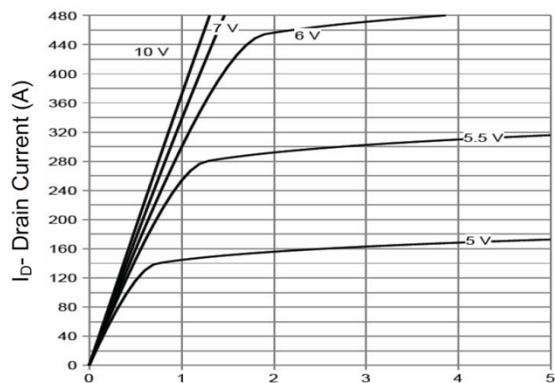
(T_A=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	120			V
Drain Cut-Off Current	I _{DSS}	V _{DS} =96V,V _{GS} = 0V			1	uA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V , V _{DS} =0V			±0.1	uA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-Source ON Resistance	R _{DS(on)}	V _{GS} =10V, I _D =50A		3.5	4.5	Ω
Dynamic characteristics ⁴						
Input Capacitance	C _{iss}	V _{DS} =60V,V _{GS} =0V, f=1MHz		8505		pF
Output Capacitance	C _{oss}			620		
Reverse Transfer Capacitance	C _{rss}			71		
Switching Characteristics						
Total Gate Charge(4.5V)	Q _g	V _{DS} =60V, V _{GS} =10V, I _D =75A		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, I _D =75A, 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

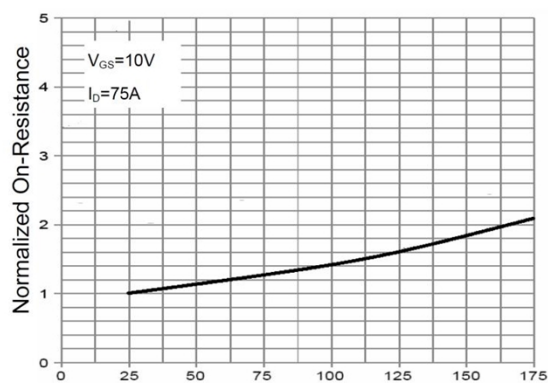
Note :

1. E_{AS} is tested at starting T_J = 25°C, V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH, R_G = 25 Ω;

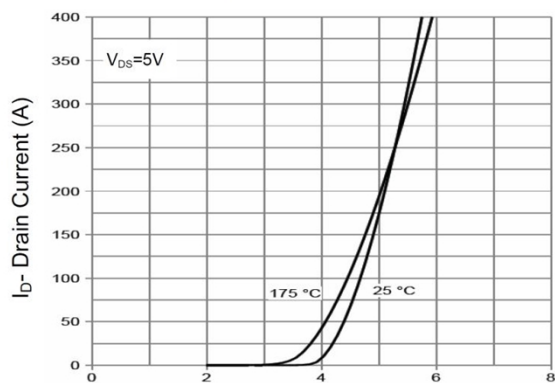
Typical Characteristics



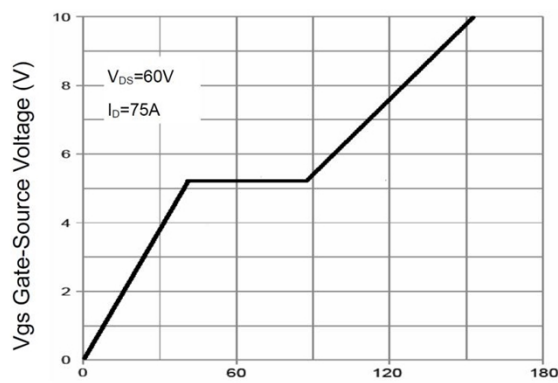
V_{DS} Drain-Source Voltage (V)
Output Characteristics



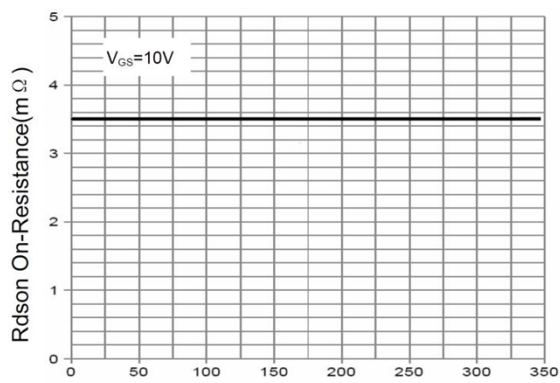
T_J -Junction Temperature($^{\circ}C$)
 $R_{DS(on)}$ -Junction Temperature



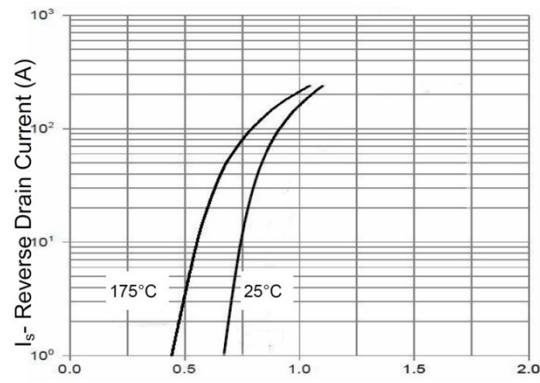
V_{GS} Gate-Source Voltage (V)
Transfer Characteristics



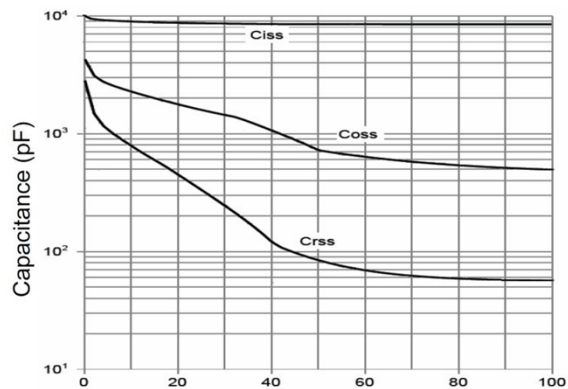
Q_g Gate Charge (nC)
Gate Charge



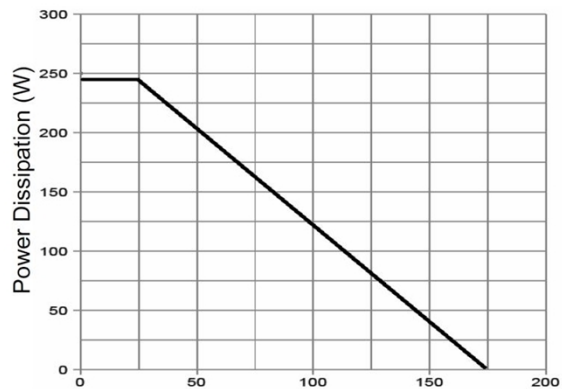
I_D - Drain Current (A)
 $R_{DS(on)}$ - Drain Current



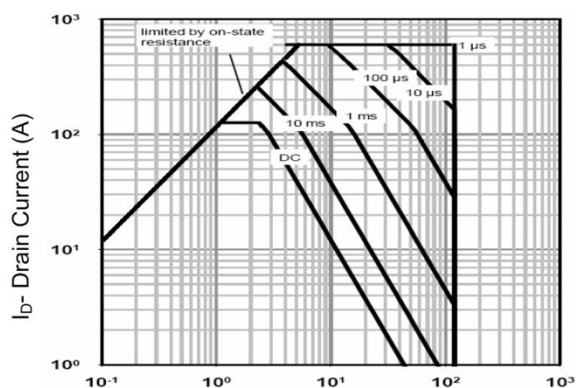
V_{SD} Source-Drain Voltage (V)
Source- Drain Diode Forward



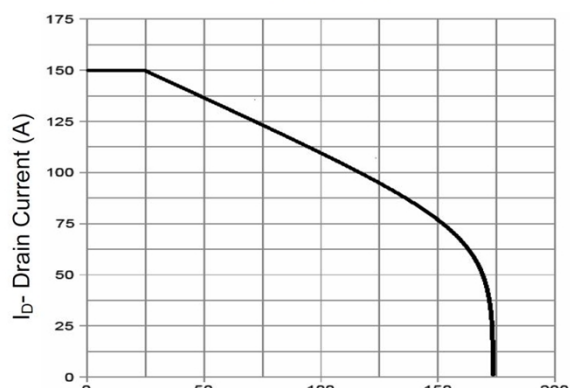
Vds Drain-Source Voltage (V)
Capacitance vs Vds



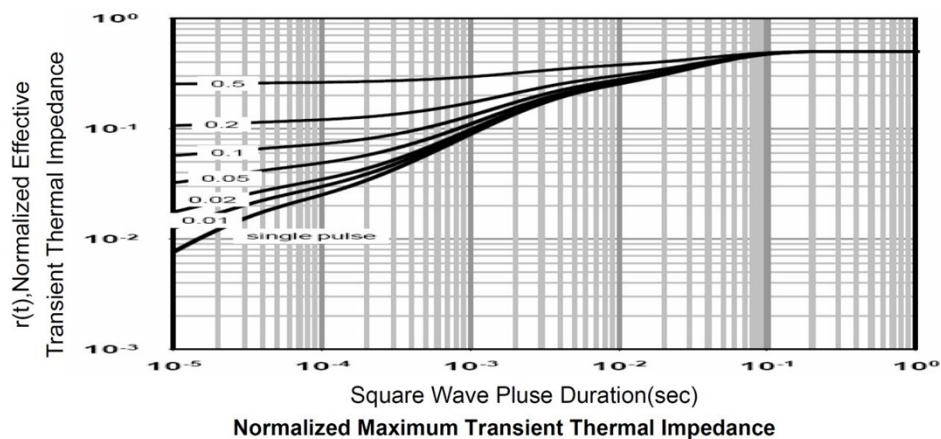
Tc-Case Temperature (°C)
Power De-rating



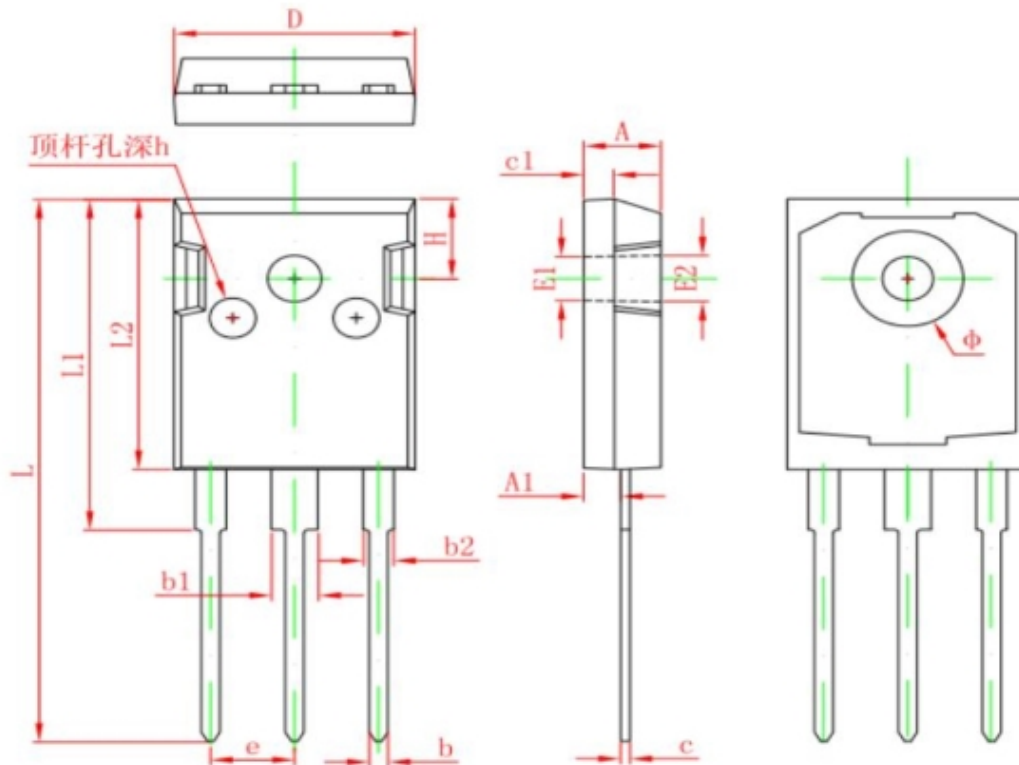
Vds Drain-Source Voltage (V)
Safe Operation Area



Tc-Case Temperature (°C)
Current De-rating



TO-247 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF.		0.138 REF.	
E2	3.600 REF.		0.142 REF.	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP.		0.215 TYP.	
H	5.980 REF.		0.235 REF.	
h	0.000	0.300	0.000	0.012