

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
150V	3.2mΩ@10V	235A

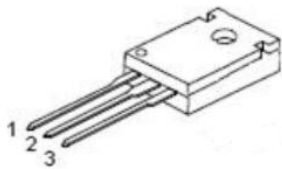
Feature

- Fast Switching
- Low Gate Charge and R_{ds(on)}
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Applications

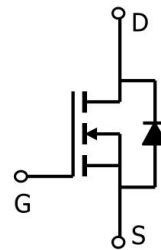
- High Speed Power switching
- DC-DC Converter
- Power Management

Package

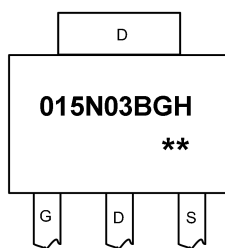


TO-247(1:G 2:D 3:S)

Circuit diagram



Marking



015N03BGH : Product code
** : Week code

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

Parameter	Symbol	Rating	Unit
Drain source voltage	V_{DS}	150	V
Gate source voltage	V_{GS}	± 20	V
Continuous drain current(Tc=25°C)	I_D	235	A
Pulsed drain current	I_{DM}	940	A
Power dissipation(Tc=25°C)	P_D	310	W
Single pulsed avalanche energy1)	E_{AS}	1296	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	0.4	°C/W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

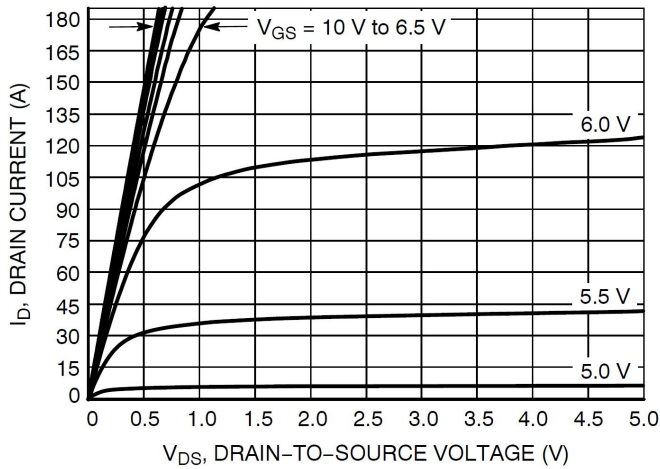
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = 250\mu A, V_{GS} = 0V$	150	-	-	V
Drain Cut-Off Current	I_{DSS}	$V_{DS} = 120V, V_{GS} = 0V$	-	-	1	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 0.1	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5	3.5	4.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 50A$	-	3.2	4	m Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 75V, V_{GS} = 0V, f = 1.0MHz$	-	10560	-	pF
Output Capacitance	C_{oss}		-	1306	-	
Reverse Transfer Capacitance	C_{rss}		-	48	-	
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=75V, V_{GS}=10V, I_D=70A$	-	160	-	nC
Gate-Source Charge	Q_{gs}		-	66	-	
Gate-Drain Charge	Q_{gd}		-	42	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 75V, R_L = 3\Omega, R_G = 4.7\Omega$	-	34	-	ns
Rise Time	t_r		-	27	-	
Turn-Off Delay Time	$t_{d(off)}$		-	78	-	
Fall Time	t_f		-	30	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	$I_S = 1A, V_{GS} = 0V$	-	-	1.2	V

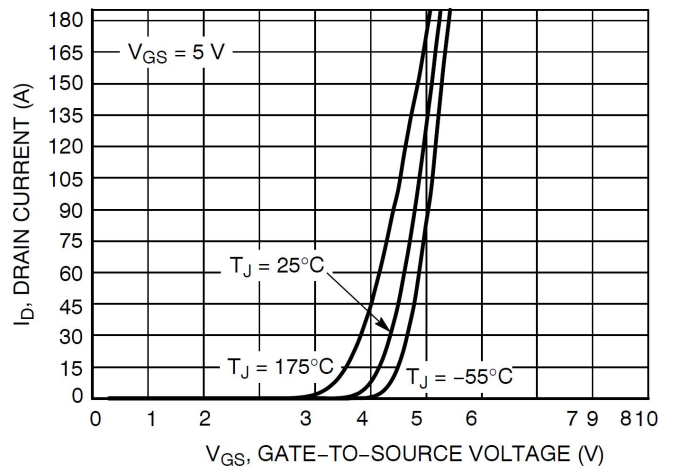
Note:

- E_{AS} is tested at starting $T_j = 25^\circ C, V_{DD}=50V, V_{GS} = 10V, L = 0.5mH, R_g=25m\Omega$;

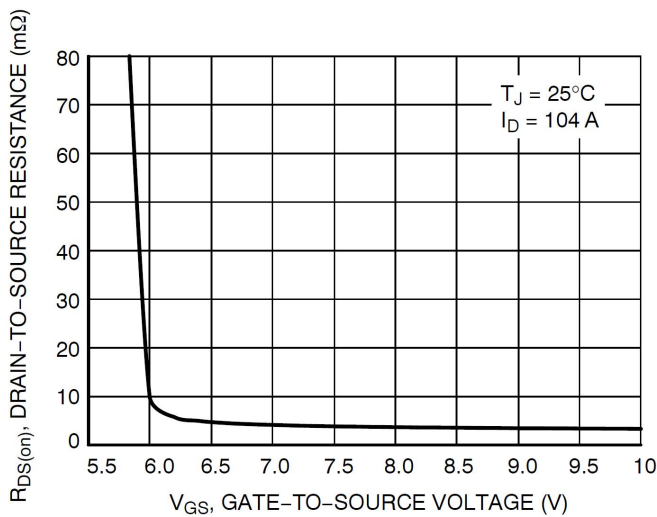
Typical Characteristics



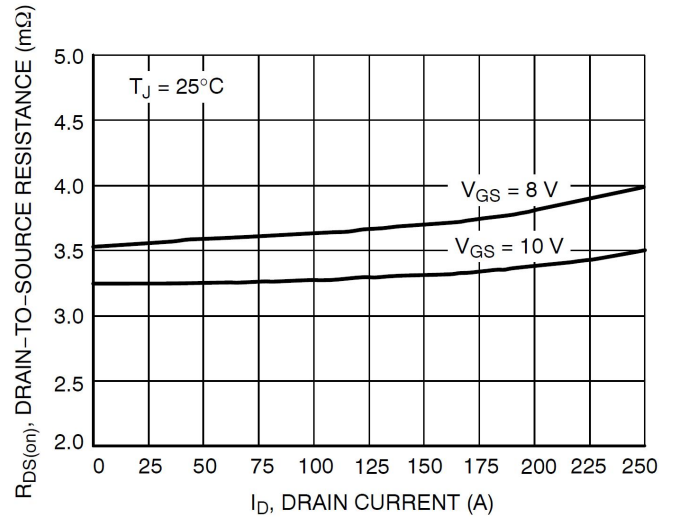
On-Region Characteristics



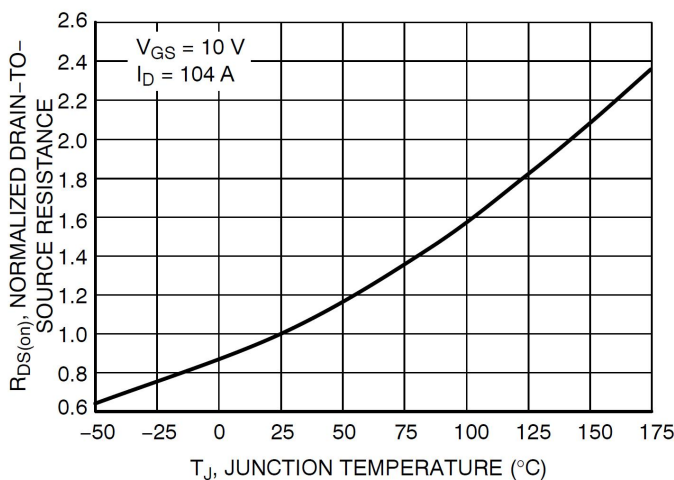
Transfer Characteristics



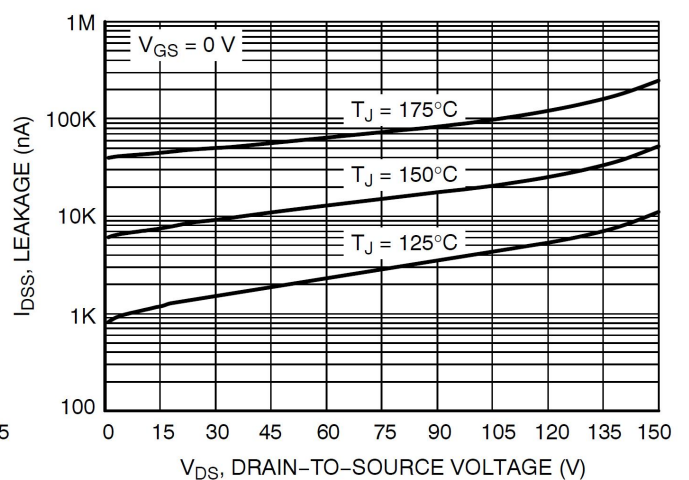
On-Resistance vs. Gate-to-Source Voltage



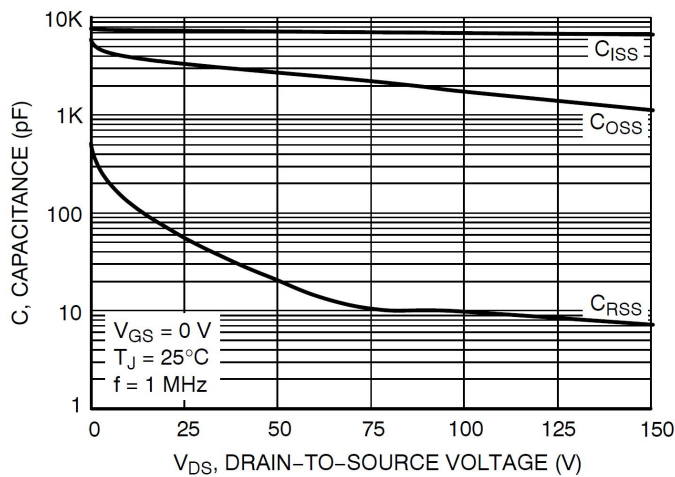
On-Resistance vs. Drain Current and Gate Voltage



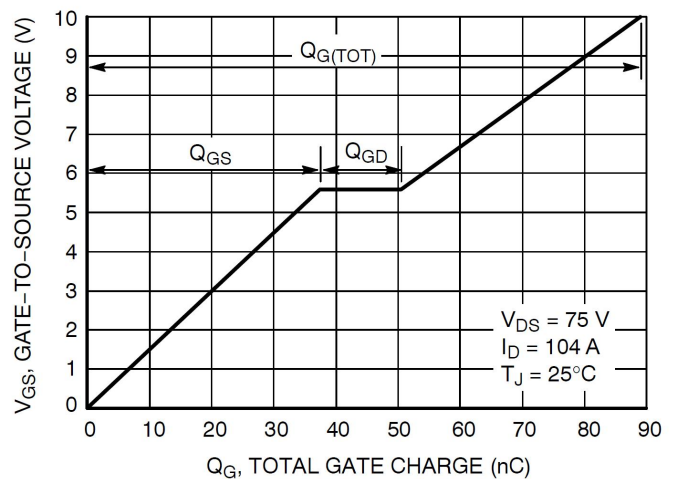
On-Resistance Variation with Temperature



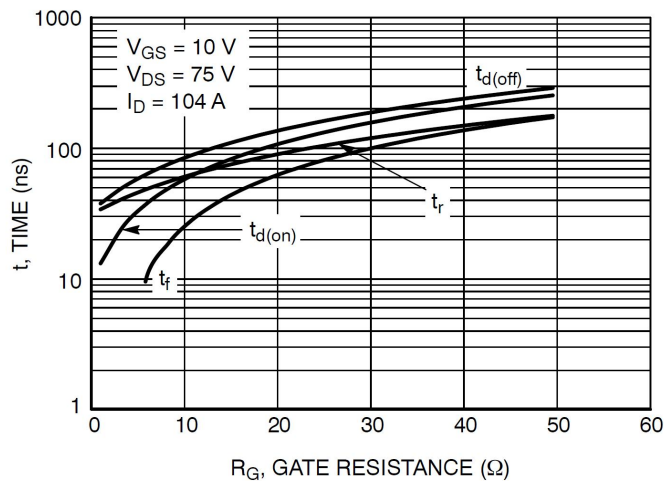
Drain-to-Source Leakage Current vs. Voltage



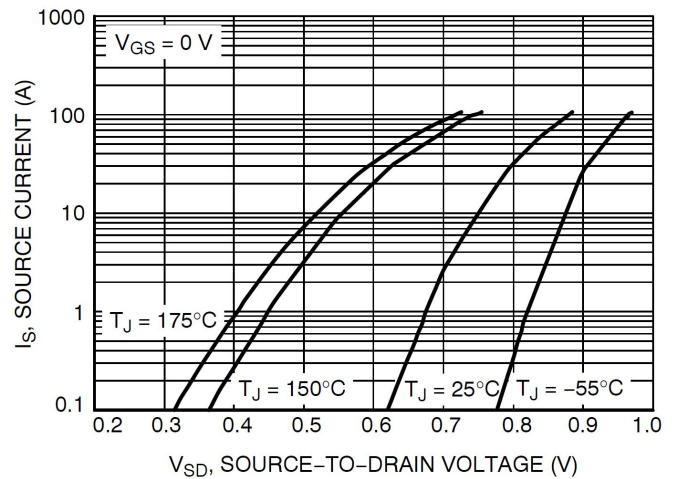
Capacitance Variation



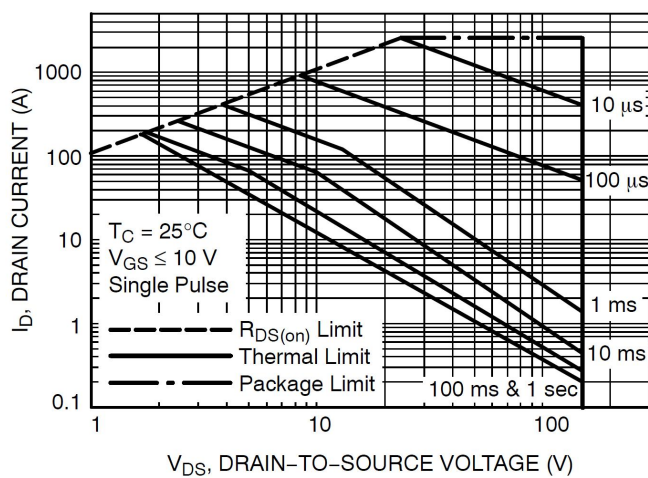
Gate-to-Source Voltage vs. Total Gate Charge



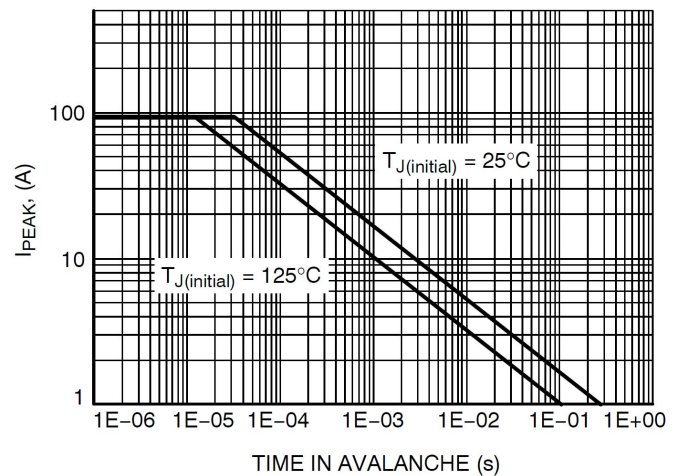
Resistive Switching Time Variation vs. Gate Resistance



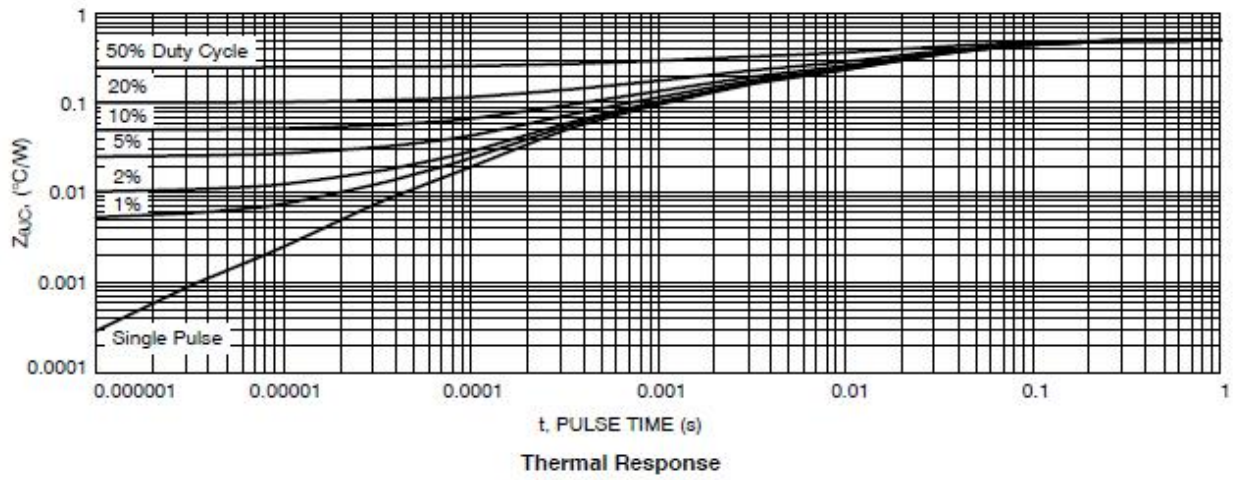
Diode Forward Voltage vs. Current



Maximum Rated Forward Biased Safe Operating Area

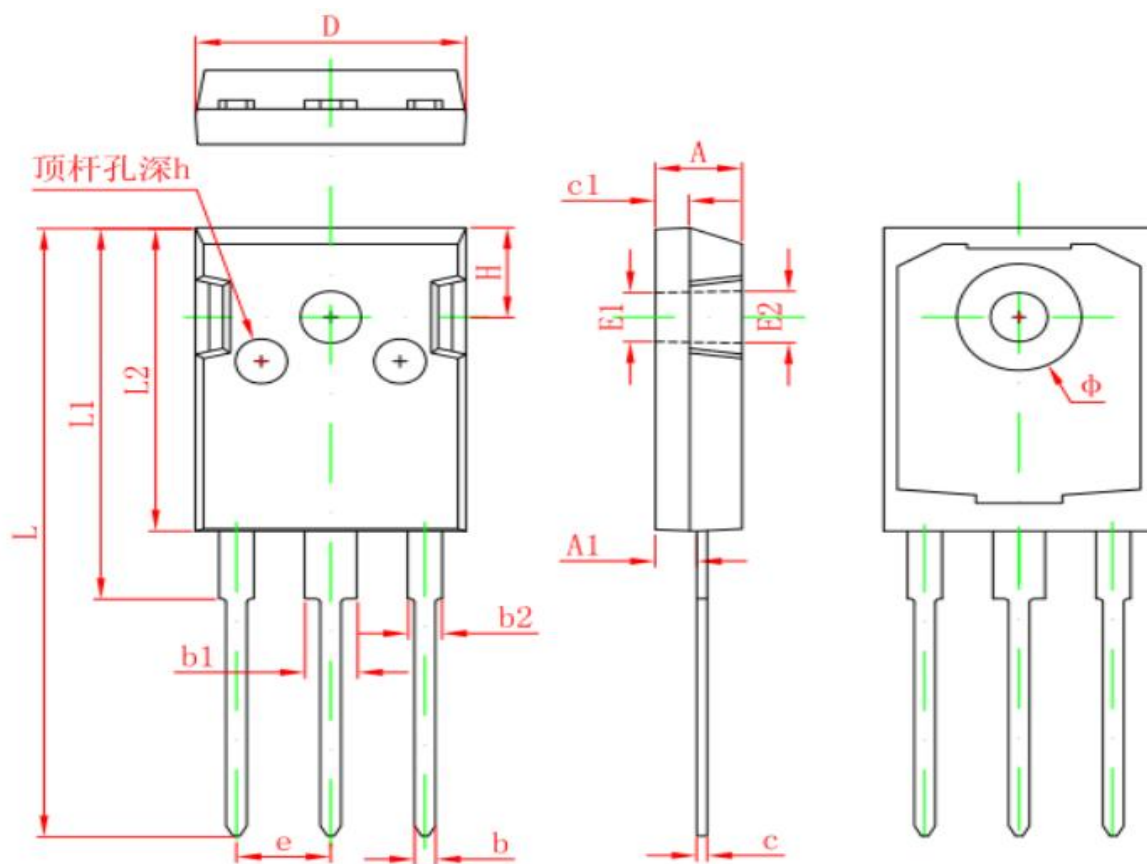


Maximum Drain Current vs. Time in Avalanche





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

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