

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
150V	9mΩ@10V	90A

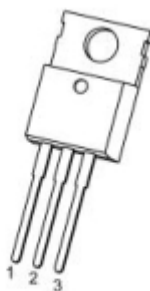
Feature

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

Applications

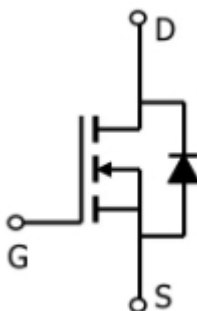
- Power switching application
- DC-DC Converter
- Power Management

Package

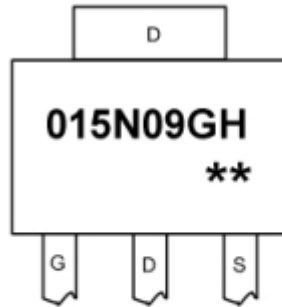


TO-220-3L-C(1:G 2:D 3:S)

Circuit diagram



Marking



015N09GH : Product code
****** : Week code

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	150	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous drain current(T _c =25°C)	I _D	90	W
Pulsed Drain Current	I _{DM}	360	A
Power Dissipation (T _c = 25°C)	P _D	190	W
Single Pulse Avalanche Energy ¹	E _{AS}	961	mJ
Thermal Resistance Junction- Case	R _{θJC}	0.65	°C/ W
Operation and storage temperature	T _{STG} , T _J	-55~ +150	°C

Electrical characteristics

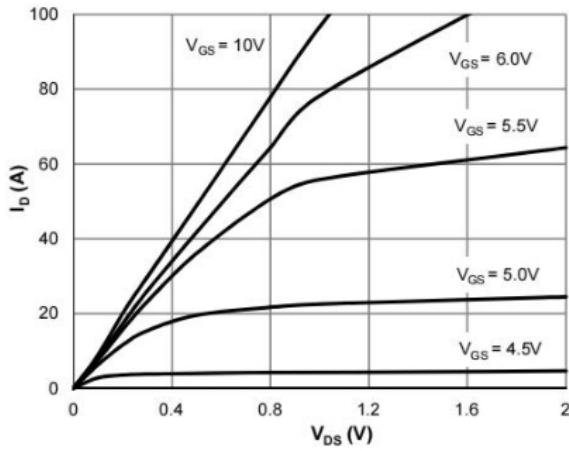
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	150			V
Drain Cut-Off Current	I _{DSS}	V _{DS} =120V,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
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		9	12	Ω
Dynamic characteristics ⁴						
Input Capacitance	C _{iss}	V _{DS} =75V,V _{GS} =0V, f=1MHz		3200		pF
Output Capacitance	C _{oss}			363		
Reverse Transfer Capacitance	C _{rss}			9		
Switching Characteristics						
Total Gate Charge(4.5V)	Q _g	V _{DS} =75V, V _{GS} =10V, I _D =20A		30		nC
Gate-Source Charge	Q _{gs}			7.8		
Gate-Drain Charge	Q _{gd}			6.5		
Turn-On Delay Time	T _{d(on)}	V _{GS} =10V, V _{DS} =75V, R _L =3.5Ω, R _G =6Ω		13		nS
Rise Time	T _r			25		
Turn-Off Delay Time	T _{d(off)}			31		
Fall Time	T _f			25		
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	I _S = 1A, V _{GS} = 0V			1.2	V

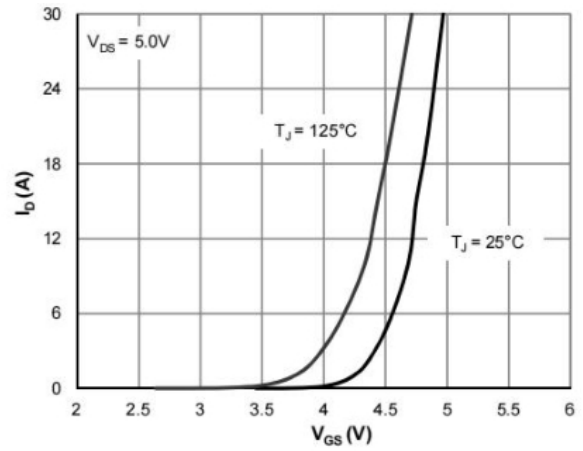
Note :

1. E_{AS} is tested at starting $T_j = 25^{\circ}\text{C}$, $V_{DD} = 75V, V_{GS} = 10V, L = 0.5\text{mH}, R_g = 25\text{m}\Omega$;

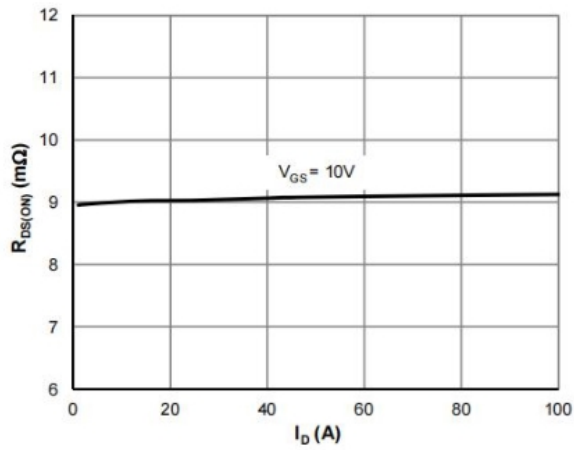
Typical Characteristics



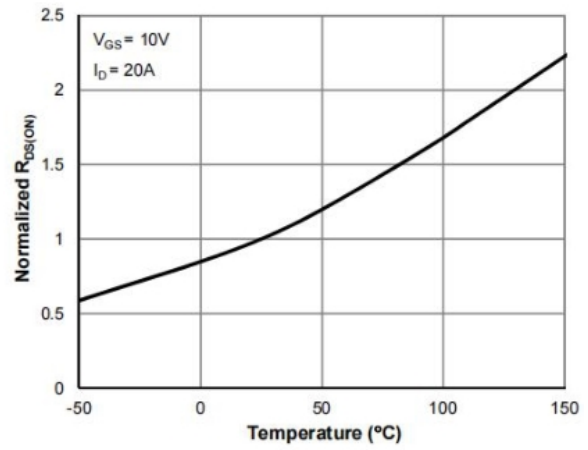
Typical Output Characteristics



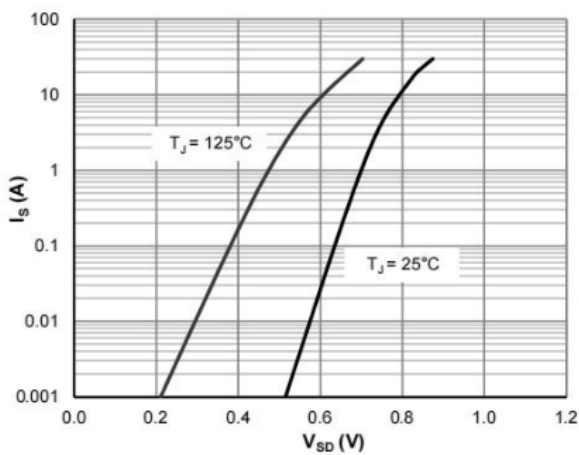
Transfer Characteristics



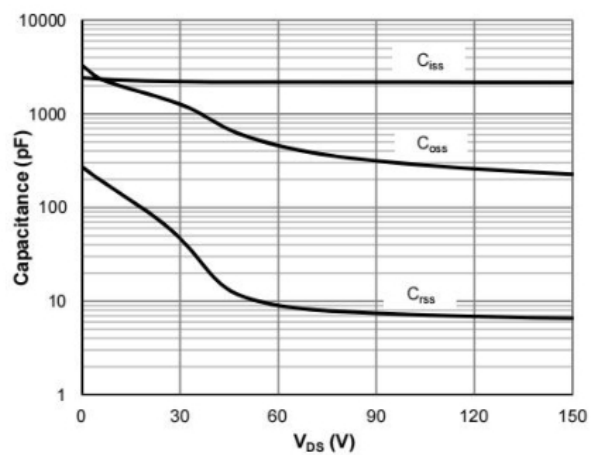
On-Resistance vs. Drain Current



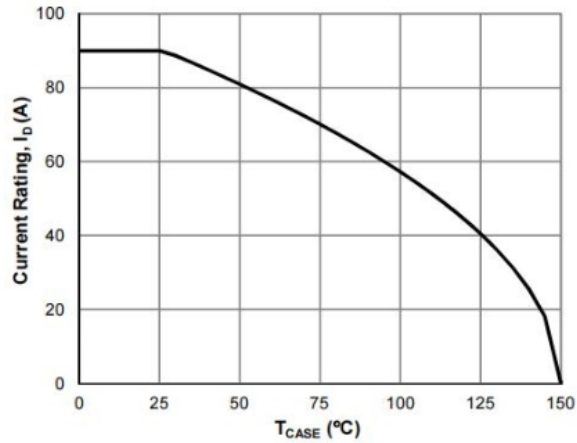
On-Resistance vs. Junction Temperature



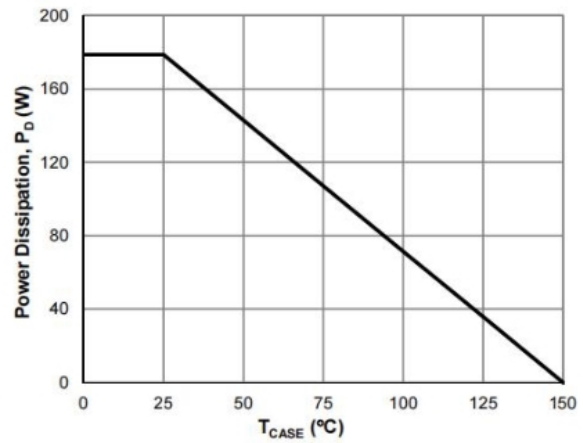
Body-Diode Characteristics



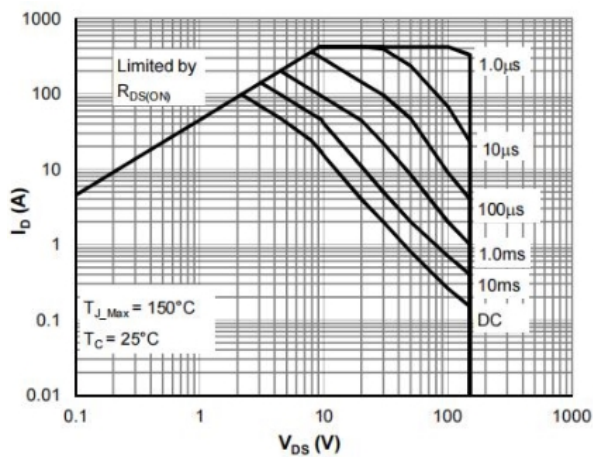
Capacitance Characteristics



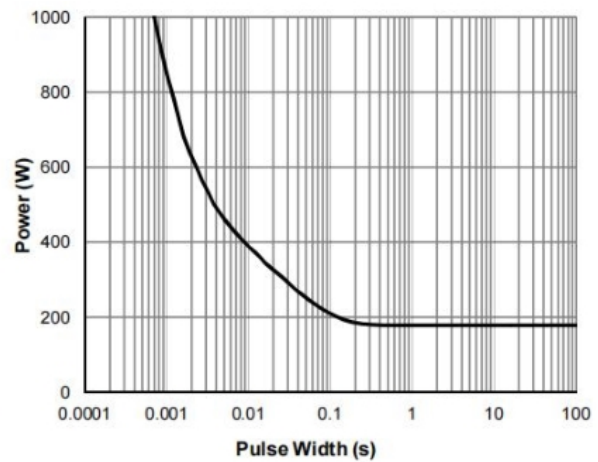
Current De-rating



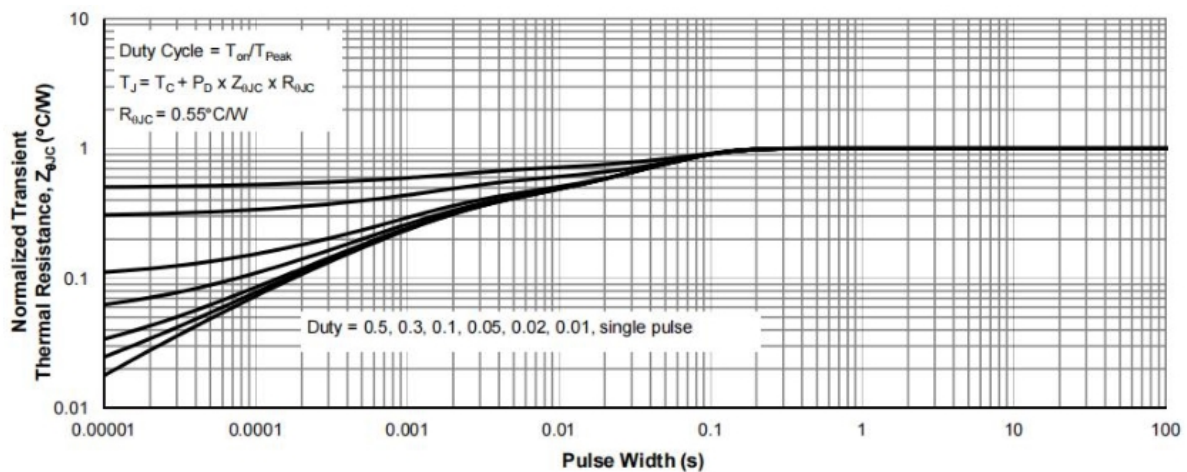
Power De-rating



Maximum Safe Operating Area

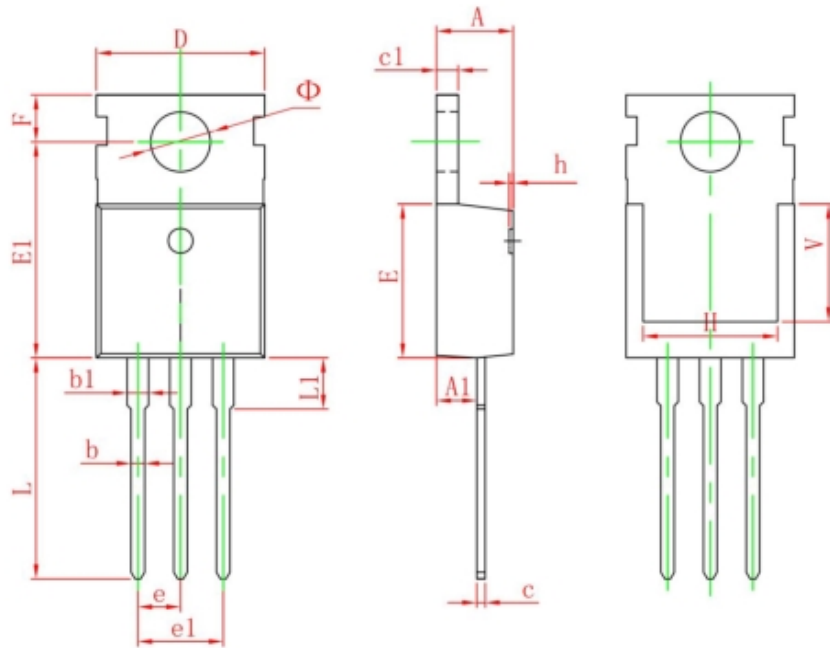


Single Pulse Power Rating, Junction-to-Case



Normalized Maximum Transient Thermal Impedance

TO-220-3L-C Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150