SP015N09GHTD

150V N-Channel Power MOSFET

Product Summary

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

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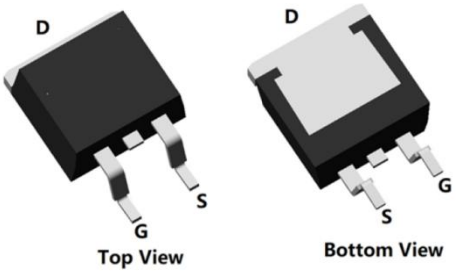
Feature

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

Applications

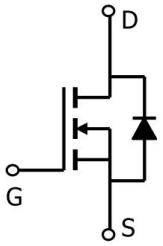
- PWM Application
- Hard switched and high frequency circuits
- Power Management

Package

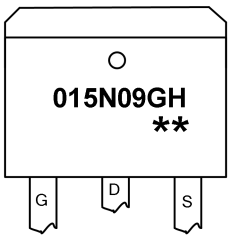


TO-263(1:G 2:D 3:S)

Circuit diagram



Marking



015N09GH : Device Code
**** : Week Code**

Order Information

Device	Package	Unit/Tape
SP015N09GHTD	TO-263	800

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Tc=25℃)	I_D	90	A
Continuous Drain Current (Tc=100℃)	I_D	60	A
Pulsed Drain Current	I_{DM}	360	A
Single Pulse Avalanche Energy[1]	E_{AS}	462	mJ
Power Dissipation (Tc=25℃)	P_D	180	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.69	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

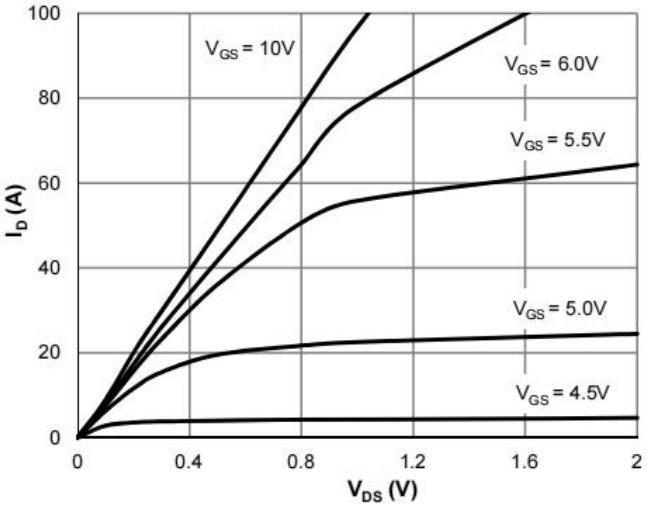
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250μA, V_{GS} = 0V	150	-	-	V
Drain Cut-Off Current	I_{DSS}	V_{DS} = 120V, 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 = 20A	-	9	12	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS=75V , VGS=0V , f=1MHz	-	3310	-	pF
Output Capacitance	C_{oss}		-	268	-	
Reverse Transfer Capacitance	C_{rss}		-	9	-	
Total Gate Charge	Q_g	VDS=75V , VGS=10V , ID=20A	-	30	-	nC
Gate-Source Charge	Q_{gs}		-	17.8	-	
Gate-Drain Charge	Q_{gd}		-	7	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VDD=75V , VGS=10V , RG=6Ω ID=20A	-	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, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	90	A
Reverse Recovery Time	Trr	IS=20A, di/dt=200A/us, TJ=25℃	-	78	-	nS
Reverse Recovery Charge	Qrr		-	185	-	nC

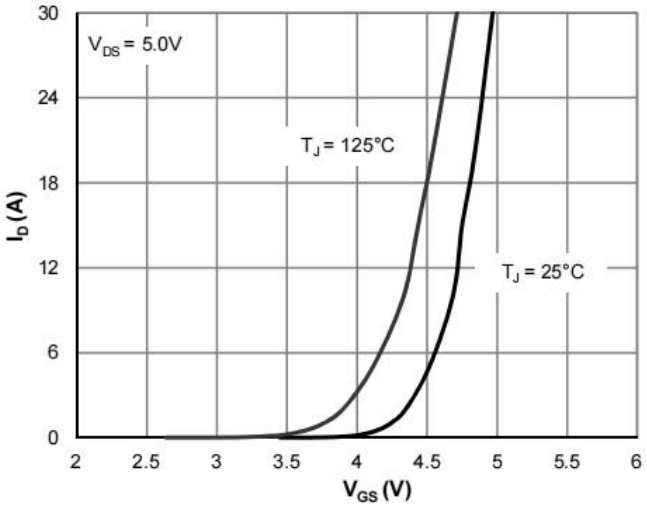
Note :

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

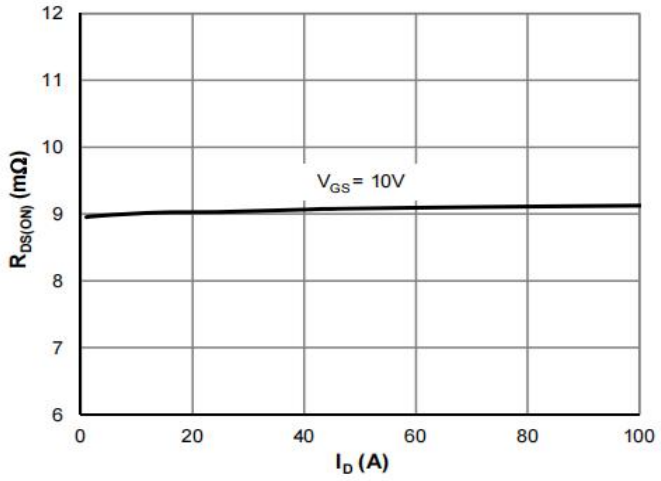
Typical Characteristics



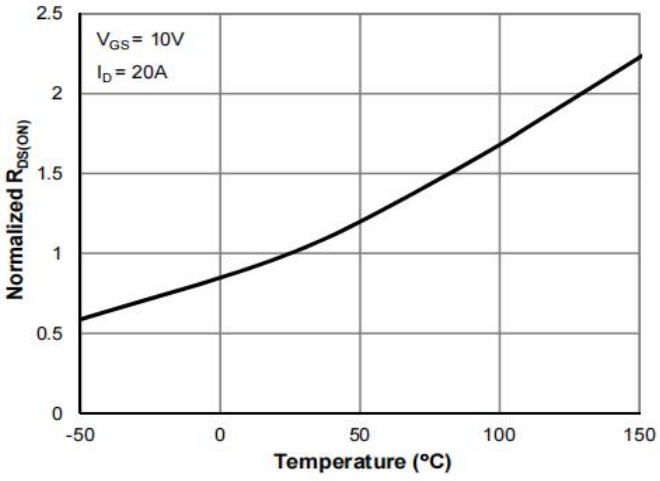
Typical Output Characteristics



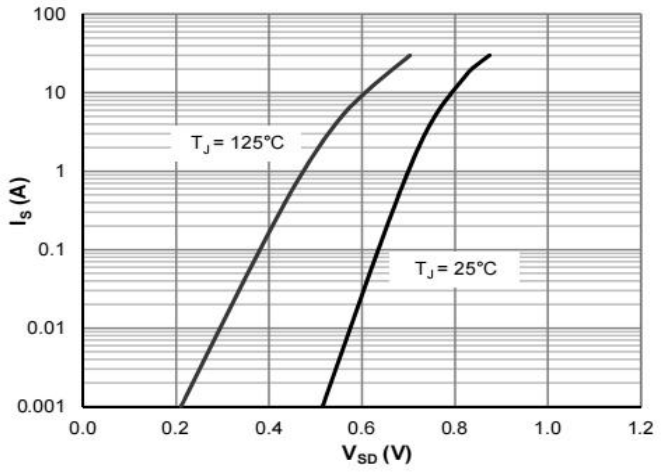
Transfer Characteristics



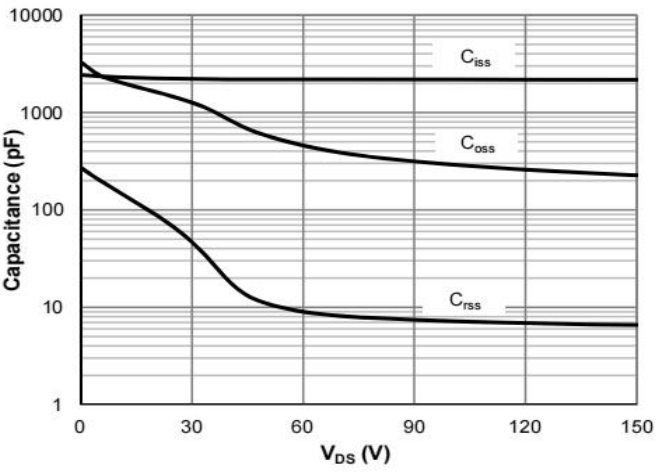
On-Resistance vs.Drain Current



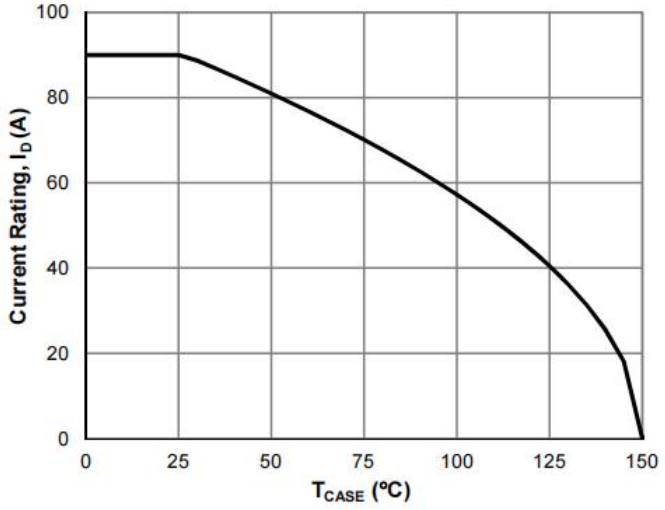
On-Resistance vs.Junction Temperature



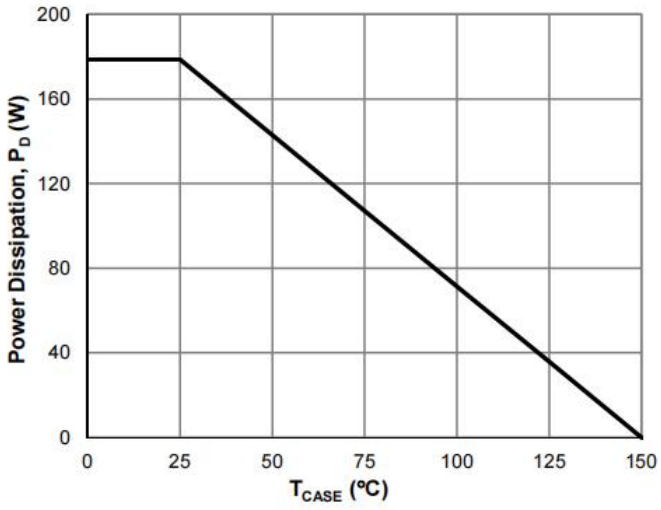
Body-Diode Characteristics



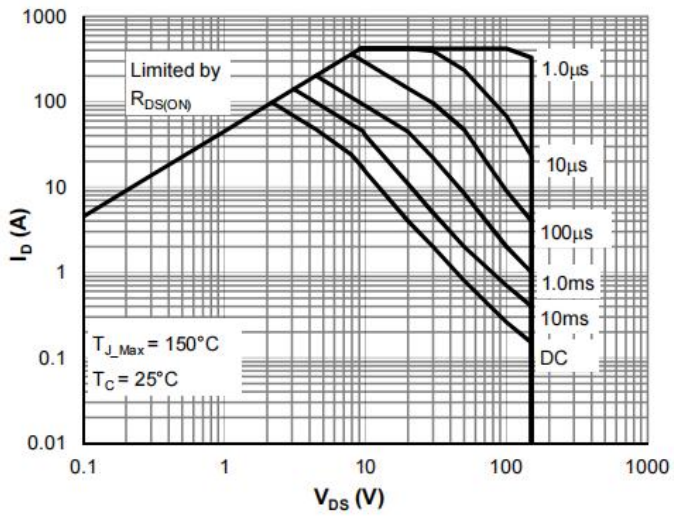
Capacitance Characteristics



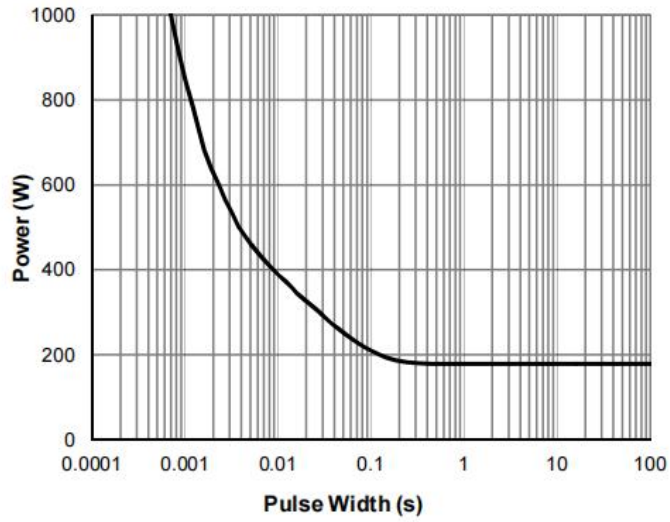
Current De-rating



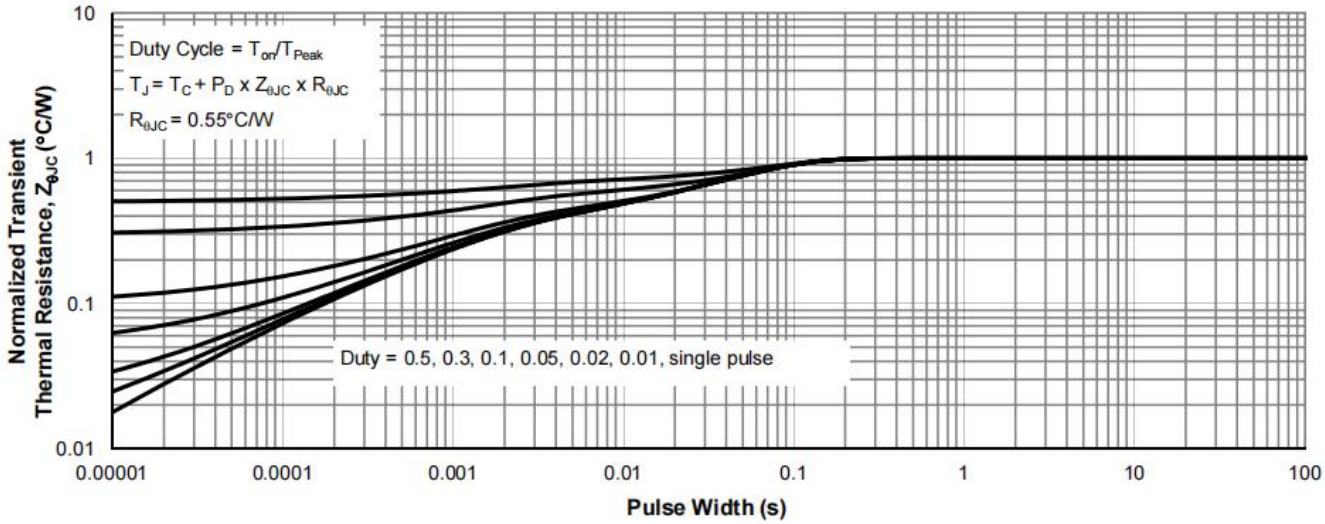
Power De-rating



Maximum Safe Operating Area

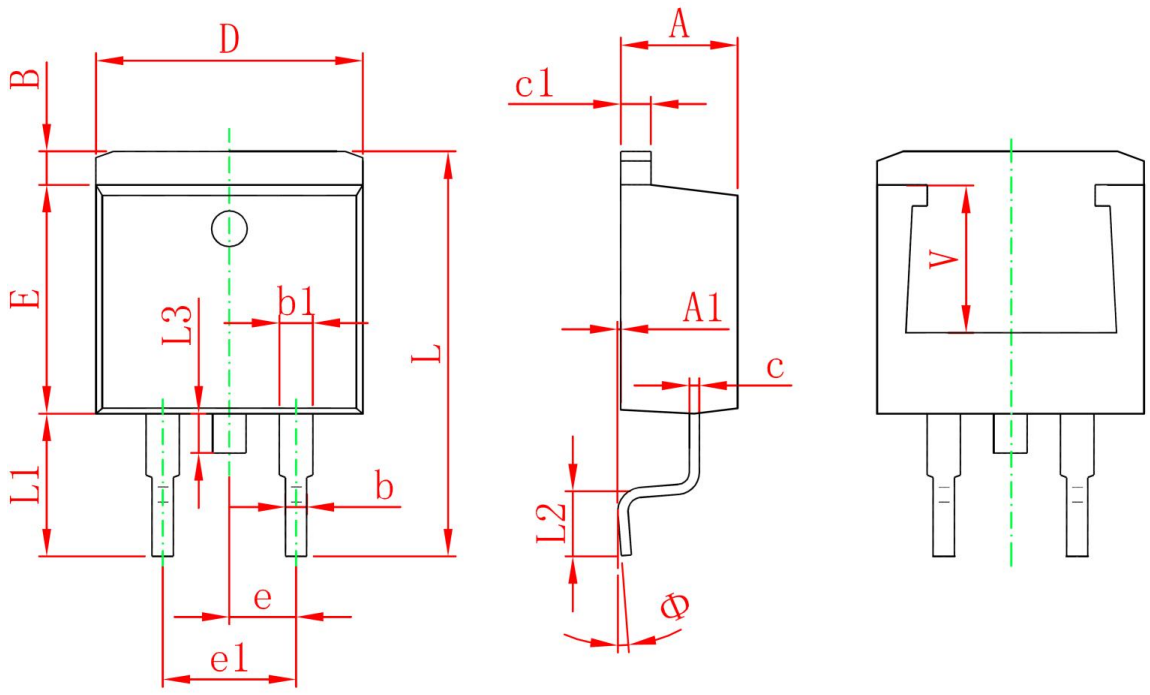


Single Pulse Power Rating,Junction-to-Case



Normalized Maximum Transient Thermal Impedance

TO-263 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	