

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	2.1m Ω @10V	270A



合肥矽普半导体

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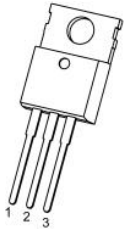
Feature

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

Applications

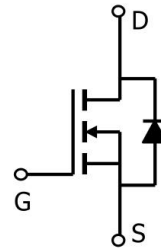
- Power switching application
- DC-DC Converter
- Power Management

Package

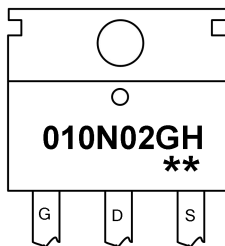


TO-220-3L-C(1:G 2:D 3:S)

Circuit diagram



Marking



010N02GH : Product code
****** : Week code

Order Information

Device	Package	Unite/Tube
SP010N02GHTQ	TO-220-3L	50

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

Parameter	Symbol	Rating	Unit
Drain source voltage	V_{DS}	100	V
Gate source voltage	V_{GS}	± 20	V
Continuous drain current (Tc=25°C)	I_D	270	A
Pulsed drain current	I_{DM}	1080	A
Power dissipation (Tc=25°C)	P_D	310	W
Single pulsed avalanche energy ¹⁾	E_{AS}	550	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	0.4	°C/W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

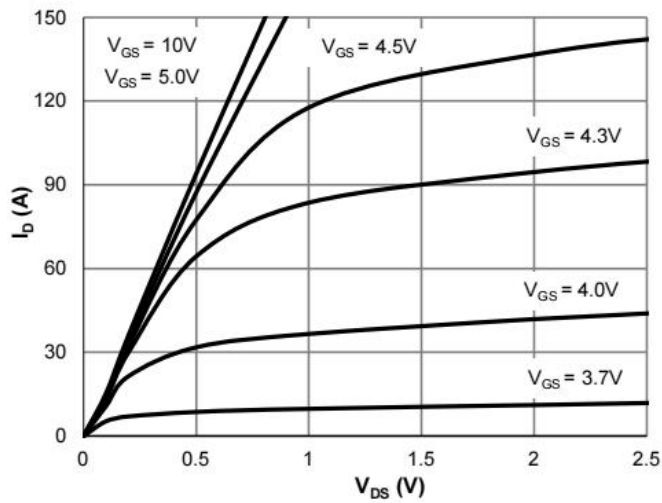
Electrical characteristics (Ta=25°C, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D = 250μA, V _{GS} = 0V	100	-	-	V
Drain Cut-Off Current	I _{DSS}	V _{DS} = 80V, 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	2.7	4.0	V
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 20A	-	2.1	2.7	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iSS}	V _{DS} =50V, V _{GS} = 0V, f = 1.0MHz	-	9625	-	pF
Output Capacitance	C _{oss}		-	1608	-	
Reverse Transfer Capacitance	C _{rSS}		-	75	-	
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =50V , V _{GS} =10V , I _D =20A	-	160	-	nC
Gate-Source Charge	Q _{gs}		-	31	-	
Gate-Drain Charge	Q _{gd}		-	37	-	
Turn-On Delay Time	t _{d(on)}	V _{GS} = 10V, V _{DS} = 50V, R _L =2.5Ω , R _G = 6.0Ω	-	35	-	ns
Rise Time	t _r		-	68	-	
Turn-Off Delay Time	t _{d(off)}		-	150	-	
Fall Time	t _f		-	105	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	I _S = 1A, V _{GS} = 0V	-	-	1.2	V

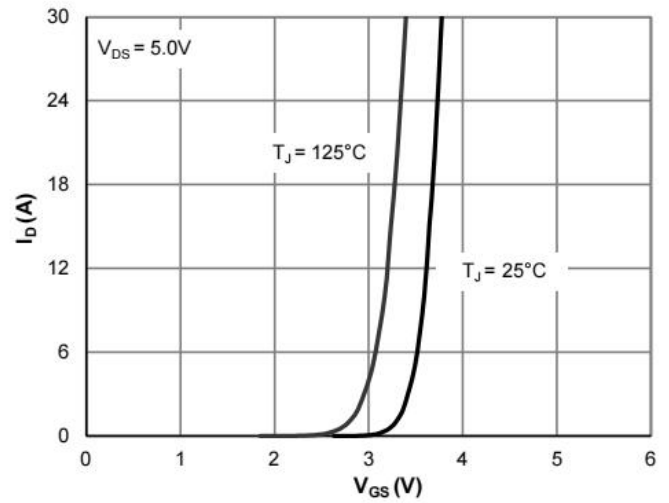
Note:

- E_{AS} is tested at starting $T_j = 25^\circ C$, $V_{DD} = 50V, V_{GS} = 10V, L = 0.1mH, R_g = 25m\Omega$;

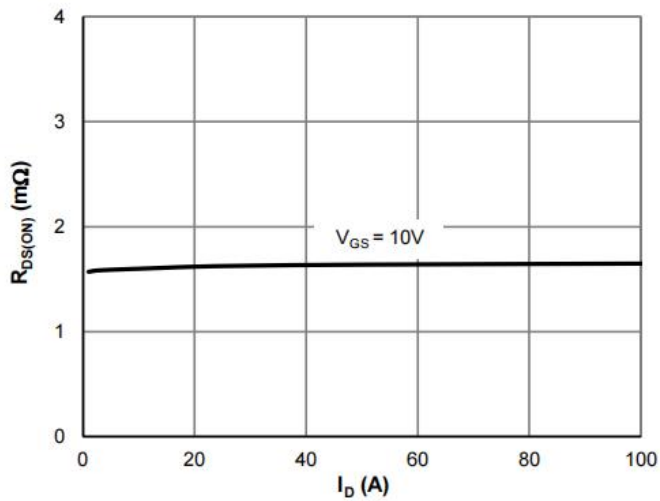
Typical Characteristics



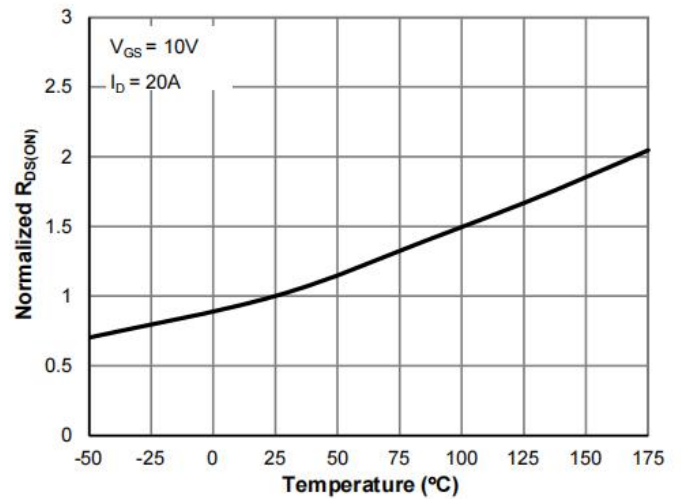
Typical Output Characteristics



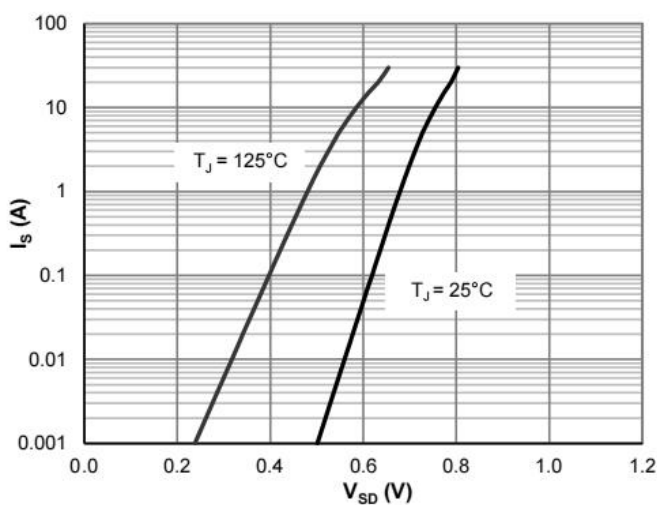
Transfer Characteristics



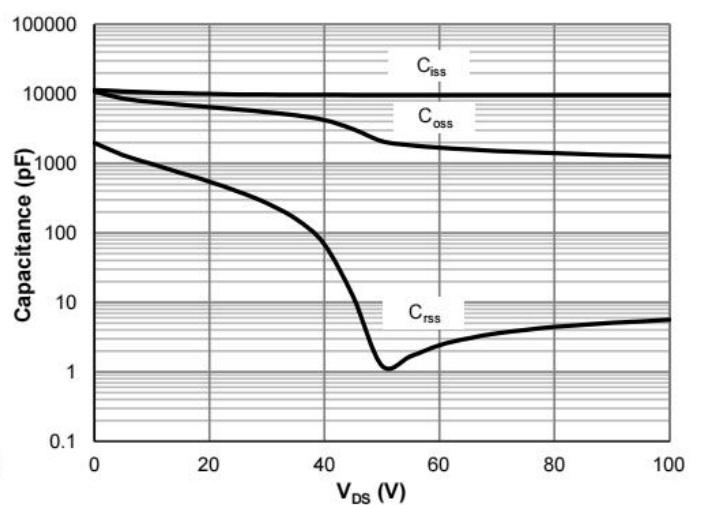
On-Resistance vs. Drain Current



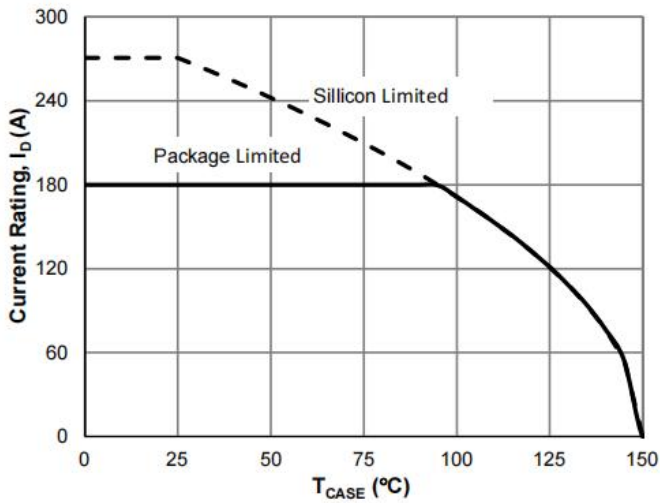
On-Resistance vs. Junction Temperature



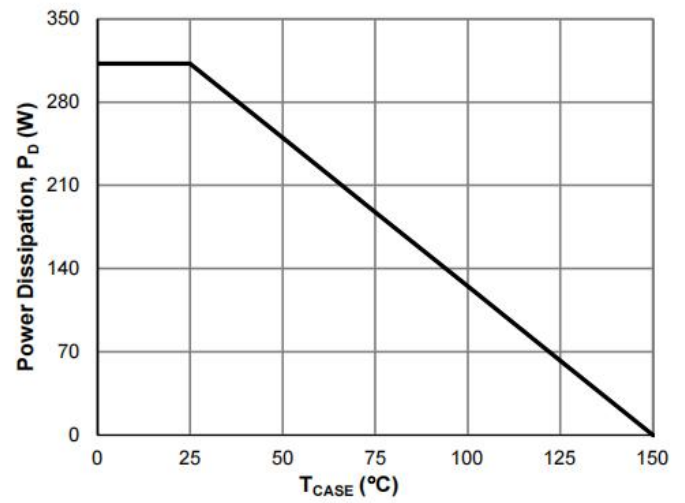
Body-Diode Characteristics



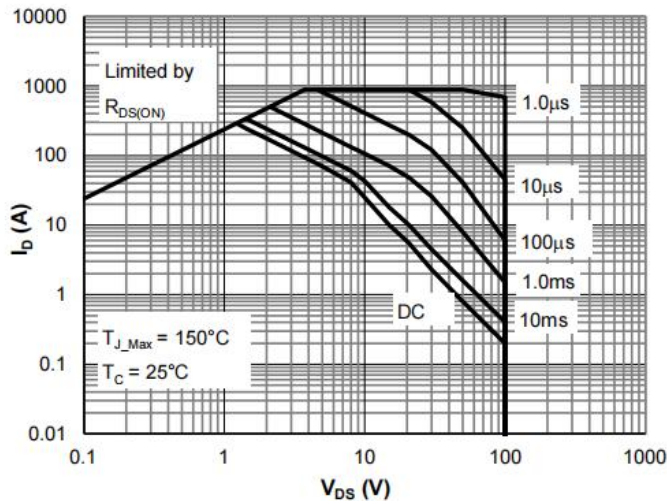
Capacitance Characteristics



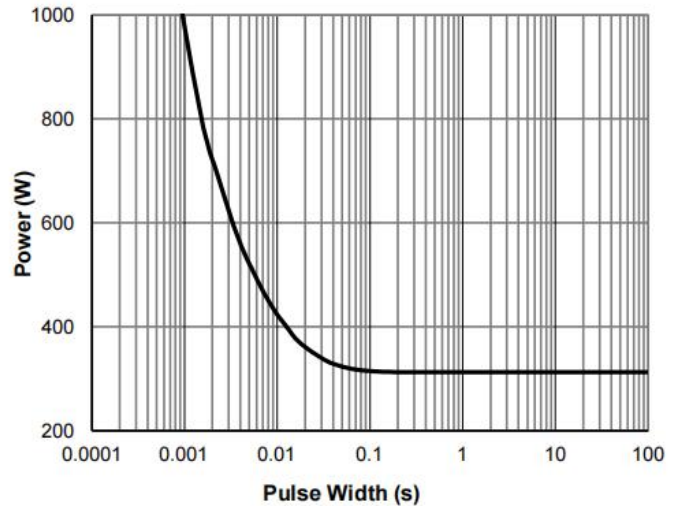
Current De-rating



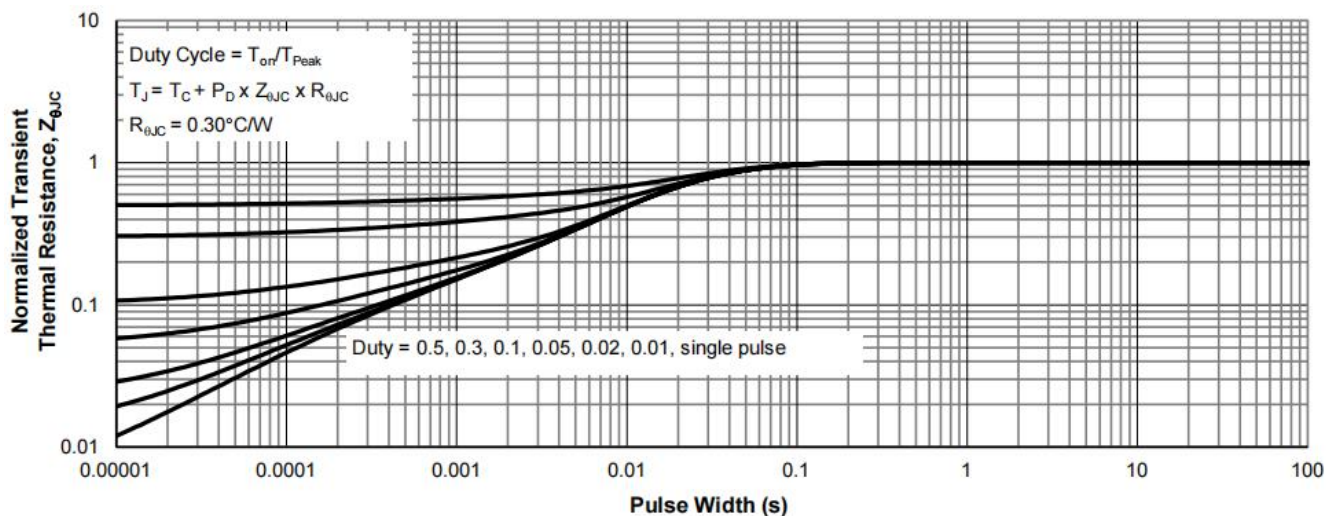
Power De-rating



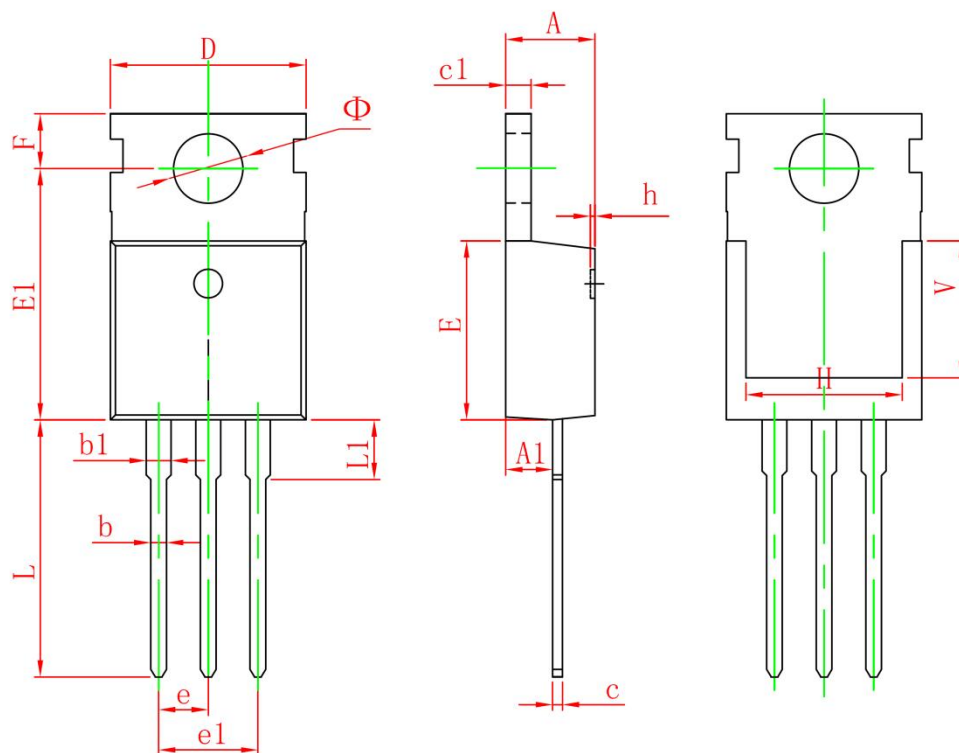
Maximum Safe Operating Area



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