

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
100V	8.5mΩ@10V	65A
	11mΩ@4.5V	



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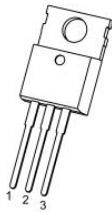
## Feature

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

## Applications

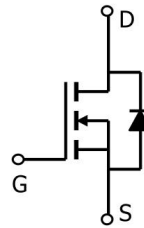
- Power switching application
- PWM Application
- DC-DC Converter

## Package

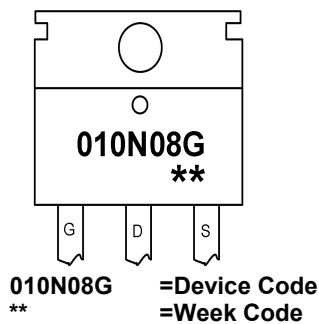


TO-220-3L-C(1:G 2:D 3:S)

## Circuit diagram



## Marking



## Order Information

Device	Package	Unite/Tube
SP010N08GTQ	TO-220-3L	50

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current (Tc=25°C)	I <sub>D</sub>	65	A
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	260	A
Single Pulse Avalanche Energy <sup>3</sup>	E <sub>AS</sub>	156	mJ
Total Power Dissipation <sup>4</sup> (Tc=25°C)	P <sub>D</sub>	90	W
Thermal Resistance Junction-Case <sup>1</sup>	R <sub>θJC</sub>	1.38	°C/W
Storage Temperature Range	T <sub>STG</sub>	-55 to 150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to 150	°C

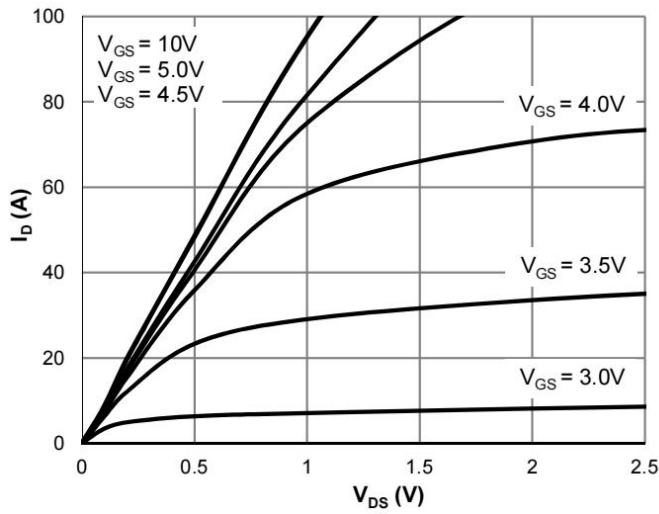
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	VGS=0V, ID=250uA	100	---	---	V
Drain-Source Leakage Current	IDSS	VDS=80V, VGS=0V, TJ=25°C	---	---	1	uA
Gate-Source Leakage Current	IGSS	VGS=±20V, VDS=0V	---	---	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS, ID=250uA	1.2	1.9	2.5	V
Static Drain-Source On-Resistance <sup>2</sup>	R <sub>DS(ON)</sub>	VGS=10V, ID=20A	---	8.5	12	mΩ
		VGS=4.5V, ID=15A	---	11	15	
<b>Dynamic Characteristics</b>						
Input Capacitance	C <sub>iss</sub>	VDS=50V, VGS=0V, f=1MHz	---	1635	---	pF
Output Capacitance	C <sub>oss</sub>		---	339	---	
Reverse Transfer Capacitance	C <sub>rss</sub>		---	22	---	
<b>Switching Characteristics</b>						
Total Gate Charge (4.5V)	Q <sub>g</sub>	VDS=50V, VGS=10V, ID=20A	---	14	---	nC
Gate-Source Charge	Q <sub>gs</sub>		---	5	---	
Gate-Drain Charge	Q <sub>gd</sub>		---	7	---	
Turn-On Delay Time	T <sub>d(on)</sub>	VDD=50V, VGS=10V, RL=2.5Ω, RG=6Ω	---	8	---	ns
Rise Time	T <sub>r</sub>		---	16	---	
Turn-Off Delay Time	T <sub>d(off)</sub>		---	31	---	
Fall Time	T <sub>f</sub>		---	27	---	
<b>Source-Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>2</sup>	V <sub>SD</sub>	VGS=0V, IS=1A, TJ=25°C	---	---	1.2	V

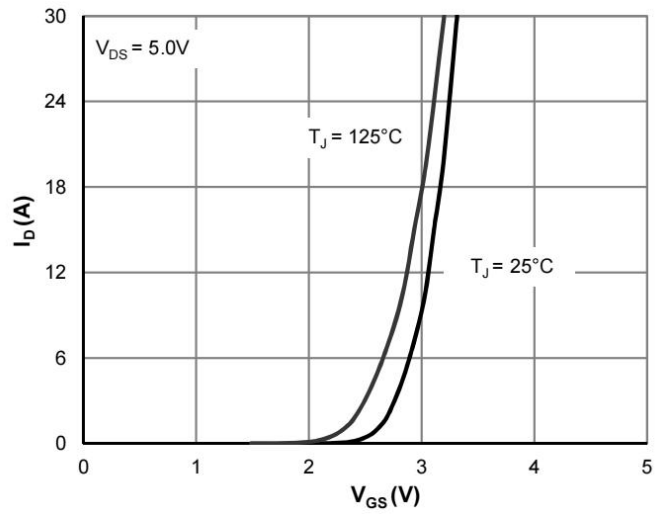
Note :

- The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%
- The EAS data shows Max. rating. The test condition is VDD=50V, VGS=10V, L=0.5mH, Rg=25Ω
- The power dissipation is limited by 150°C junction temperature

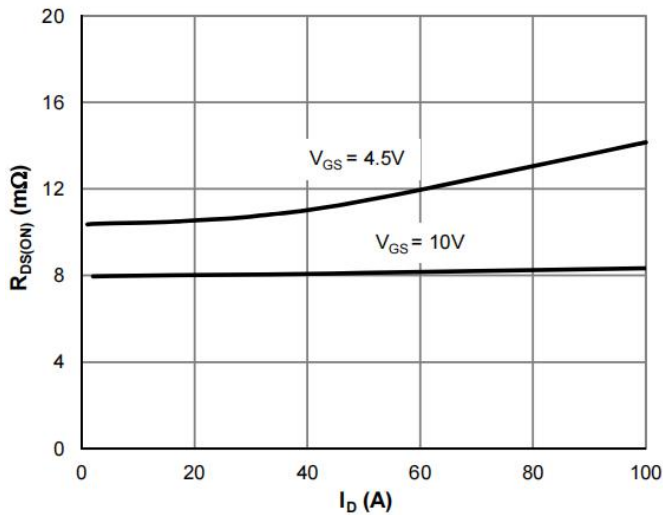
**Typical Characteristics**



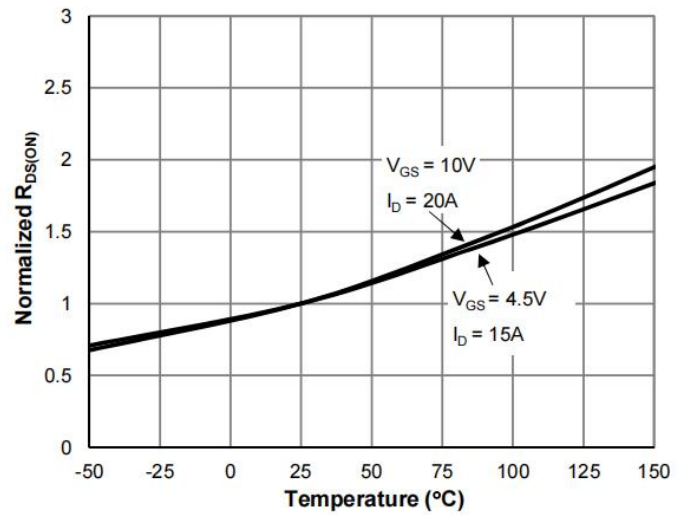
Typical Output Characteristics



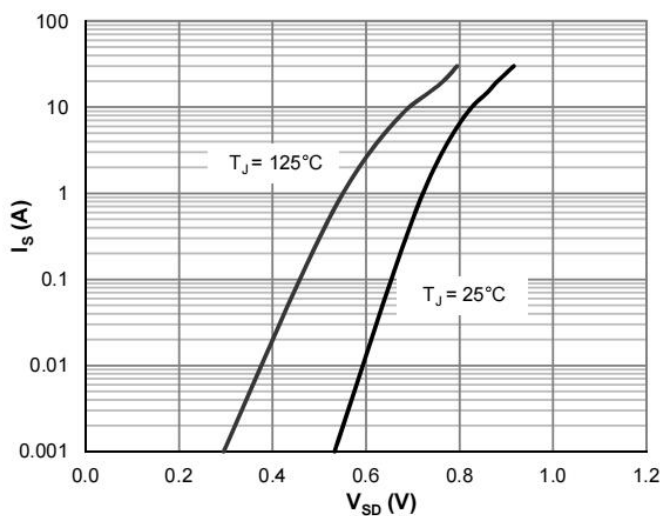
Transfer Characteristics



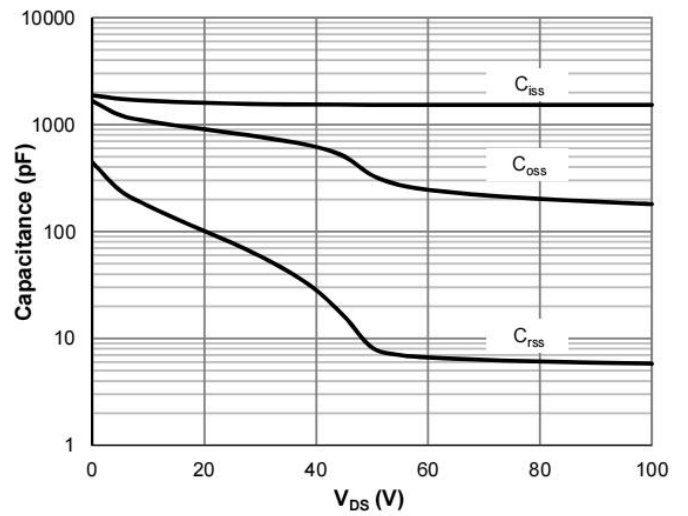
On-Resistance vs. Drain Current



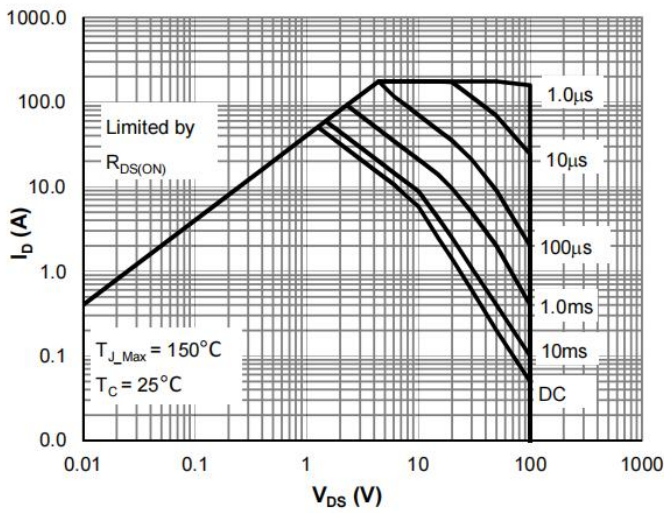
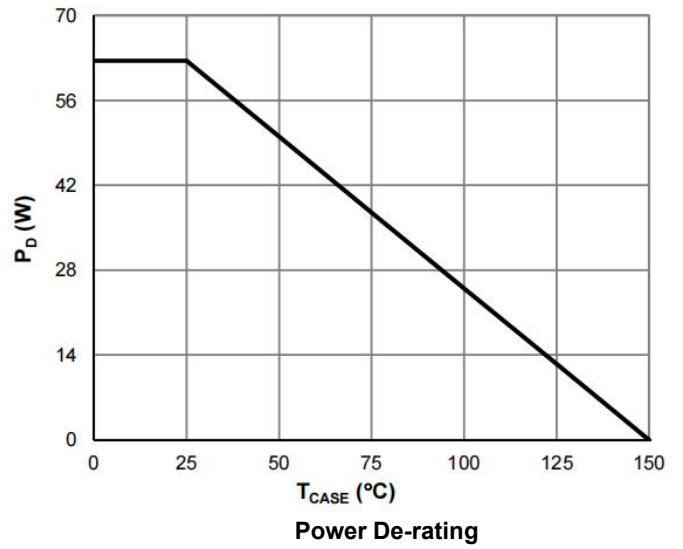
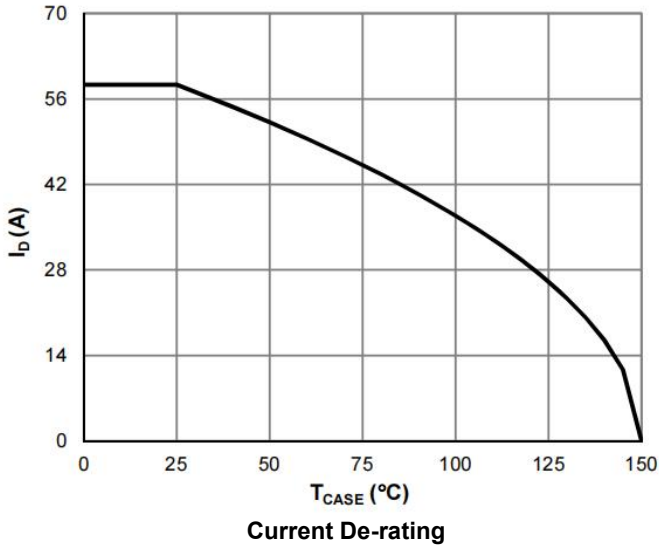
On-Resistance vs. Junction Temperature



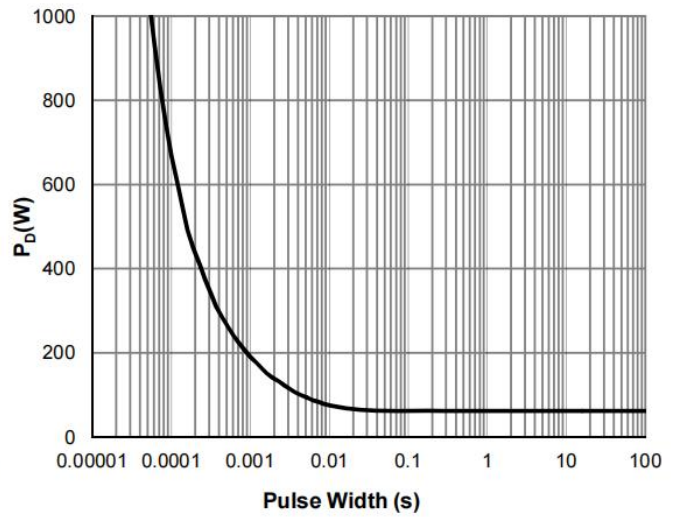
Body-Diode Characteristics



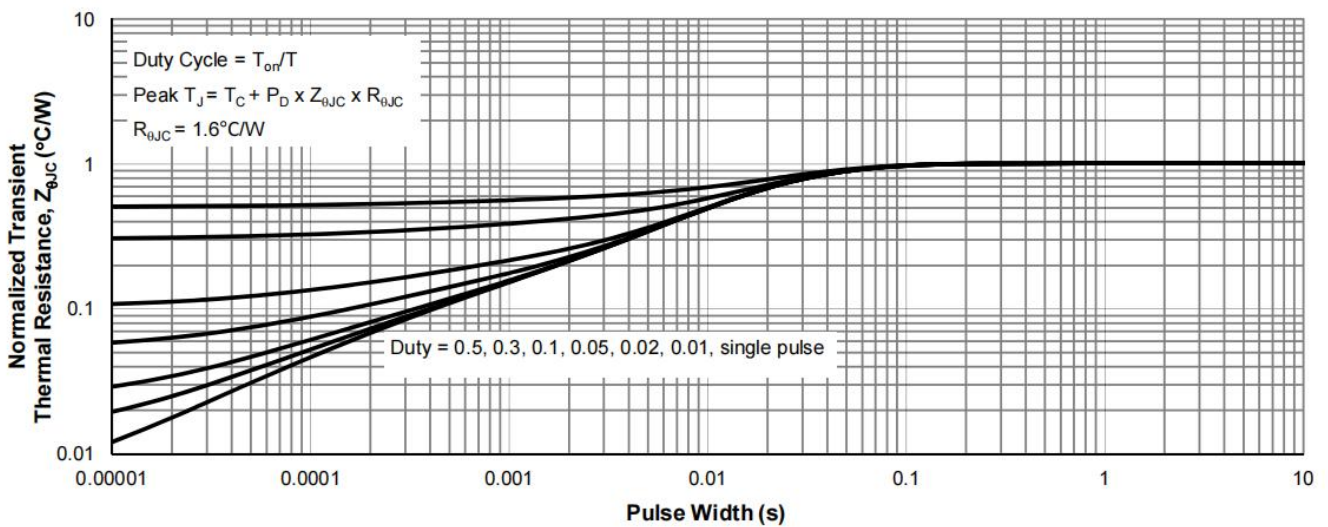
Capacitance Characteristics



Maximum Safe Operating Area

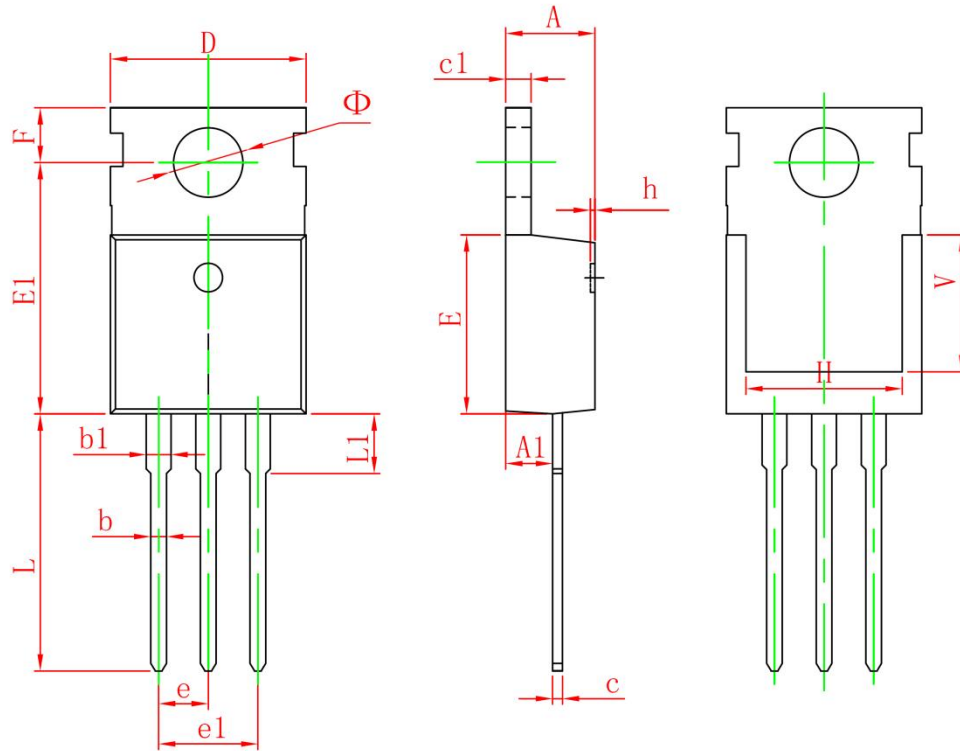


Single Pulse Power Rating, Junction-to-Case



Normalized Maximum Transient Thermal Impedance

**TO-220-3L-C Package Outline Dimensions**



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.	
$\Phi$	3.400	3.800	0.134	0.150

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