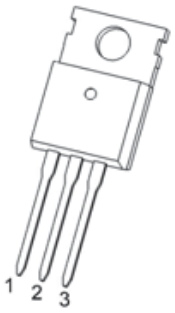
GP80N07WT

68V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
68V	6.5mΩ@10V	80A

TO-220-3L-C



1.GATE
2.DRAIN
3.SOURCE

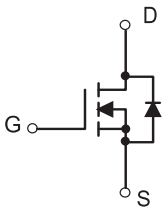
Feature

- High cell density trenched N-ch MOSFETs
- Super low gate charge
- Advanced high cell density Trench technology

Application

- High side switch in POL DC/DC converter
- Secondary side synchronous rectifier

Equivalent circuit



ABSOLUTE MAXIMUM RATINGS (T_C=25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	68	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25℃	I_D(1)	80	A
	T_C=70℃		64	A
Pulsed Drain Current		I_{DM}(1), (2)	320	A
Single Pulsed Avalanche Energy		E_{AS}*	485	mJ
Power Dissipation		P_D	2	W
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$	62.5	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

*E_{AS} Test Condition：L = 0.95 mH, IAS = 32 A, VDD = 10V, RG = 25 Ω, Starting Tj = 25°C.

MOSFET ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	68			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =68V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$ (4)	V_{DS} =V_{GS}, I_D =250μA	2.0	3.0	4.0	V
Drain-source on-resistance	$R_{DS(on)}$ (4)	V_{GS} =10V, I_D =40A		6.5	8.5	mΩ
Forward tranconductance	g_{FS}(4)	V_{DS} =10V, I_D =40A		34		S
Dynamic characteristics(5)						
Input capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V,f =1MHz		3899		pF
Output capacitance	C_{oss}			320		
Reverse transfer capacitance	C_{rss}			303		
Switching Characteristics(5)						
Total gate charge	Q_g	V_{DS} =35V,V_{GS} =10V,I_D =40A		75		nC
Gate-source charge	Q_{gs}			26		
Gate-drain charge	Q_{gd}			20		
Turn-on delay time	$t_{d(on)}$	V_{DD}=35V,V_{GS}=10V,R_G=4.7Ω, I_D =40A		20		ns
Turn-on rise time	t_r			52		
Turn-off delay time	$t_{d(off)}$			49		
Turn-off fall time	t_f			23		
Diode Characteristics						
Continuous Source Current	I_S	V_G=V_D=0V , Force Current			80	A
Pulsed Source Current	I_{SM}				320	
Diode Forward Voltage	V_{SD}(4)	V_{GS}=0V , I_S=40A , T_J=25℃			1.2	V

Notes:

1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper

2.Pulse Test:Pulse Width < 10us, Duty Cycle < 0.5%.

3.The power dissipation is limited by 150℃ junction temperature

4.Pulse Test : Pulse width≤300μs, duty cycle≤2%.

5.Guaranteed by design, not subject to production testing.

6.The data is theoretically the same as I_D, in real applications , should be limited by total power dissip ation.

Typical Electrical and Thermal Characteristics

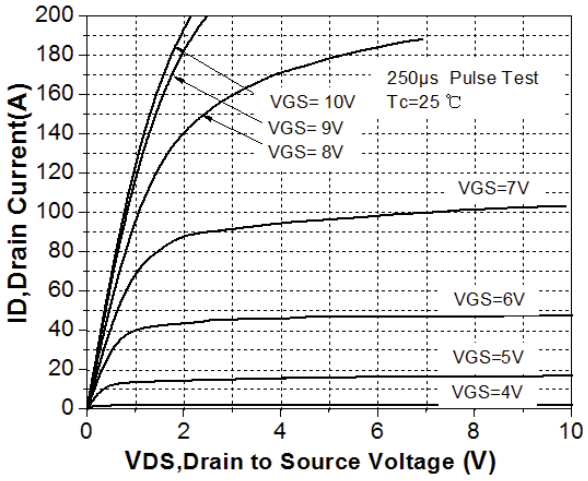


Figure 1. On-Region Characteristics

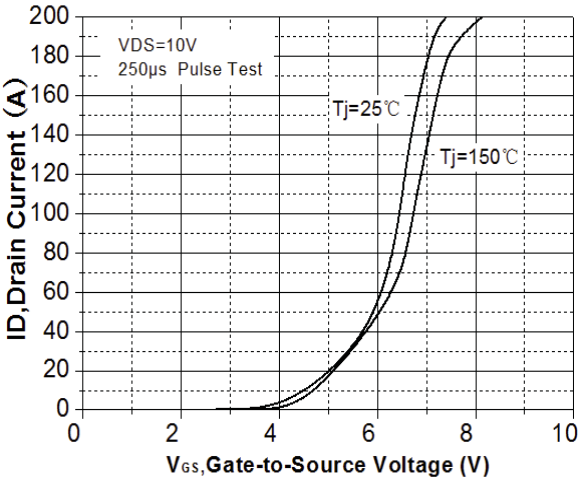


Figure 2. Transfer Characteristics

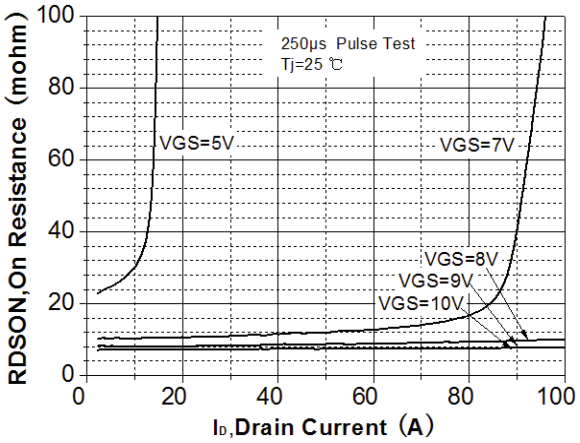


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

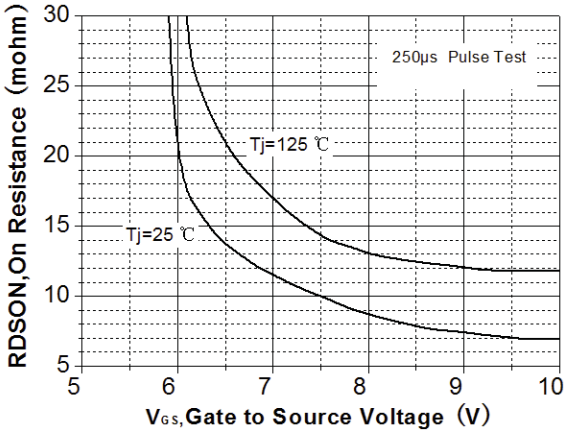


Figure 4. On-Resistance vs. Gate to Source Voltage

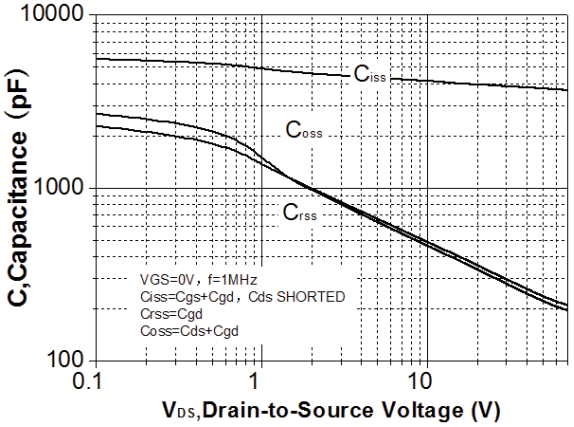


Figure 5. Capacitance Characteristics

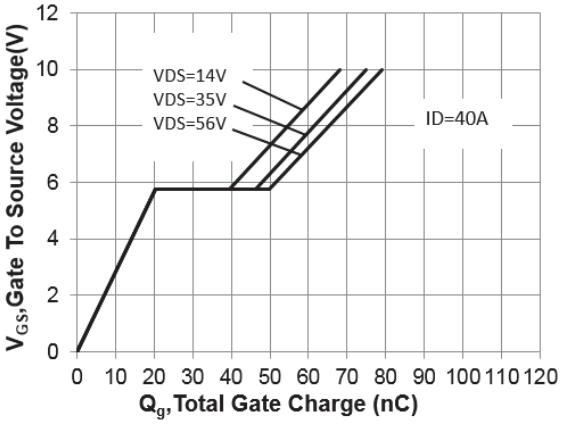


Figure 6. Gate Charge Characteristics

Typical Electrical and Thermal Characteristics

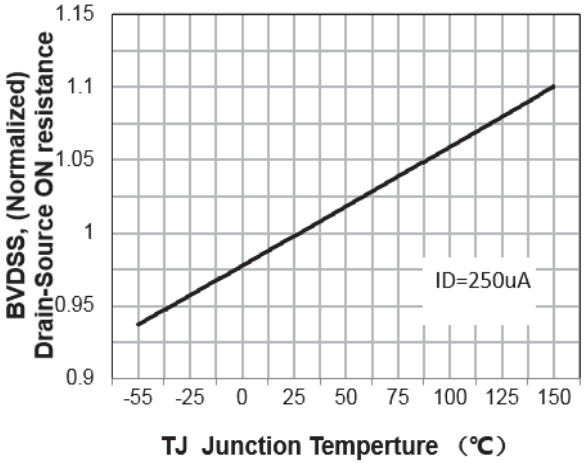


Figure 7. Breakdown Voltage Variation vs Temperature

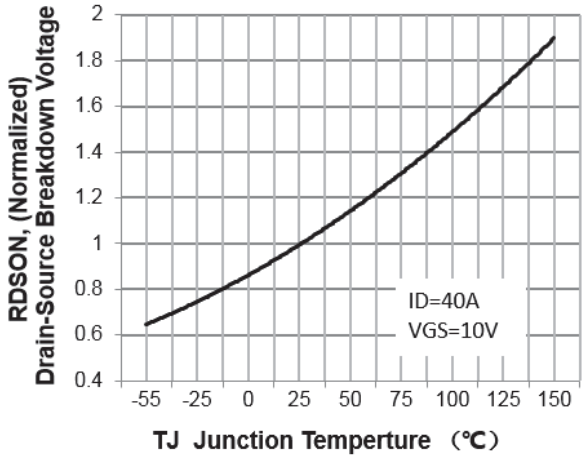


Figure 8. On-Resistance Variation vs Temperature

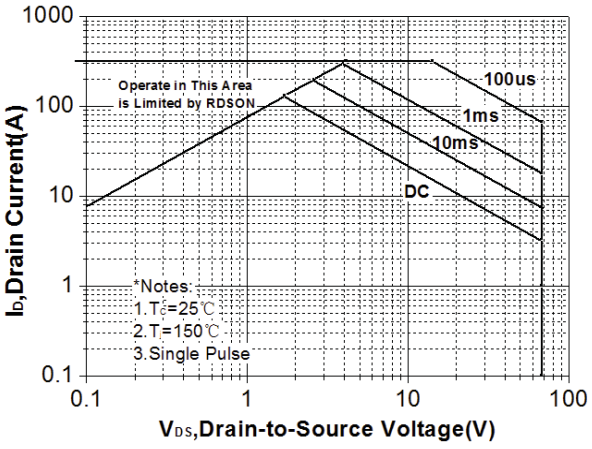


Figure 9. Maximum Safe Operating Area

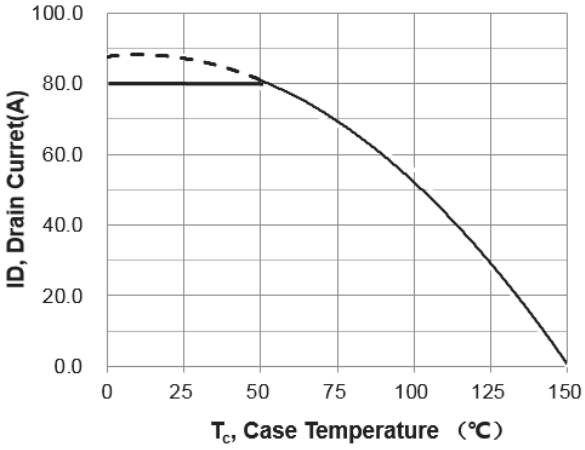


Figure 10. Maximum Drain Current vs Case Temperature

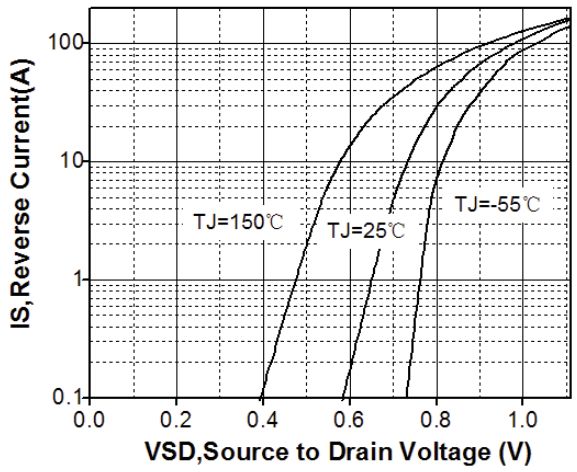


Figure 11. Body Diode Forward Voltage Vs Reverse Drain Current

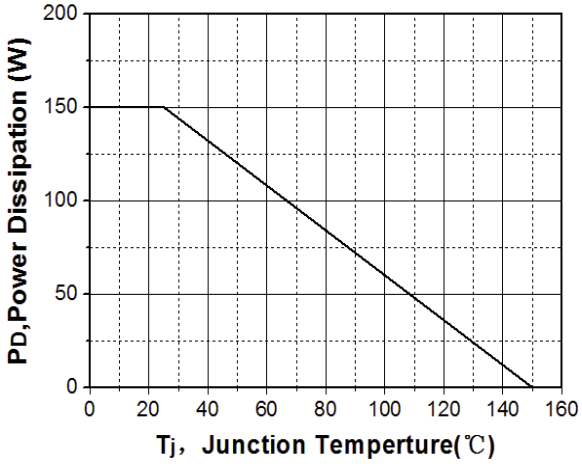


Figure 12. Power Dissipation vs Junction Temperature

Typical Electrical and Thermal Characteristics

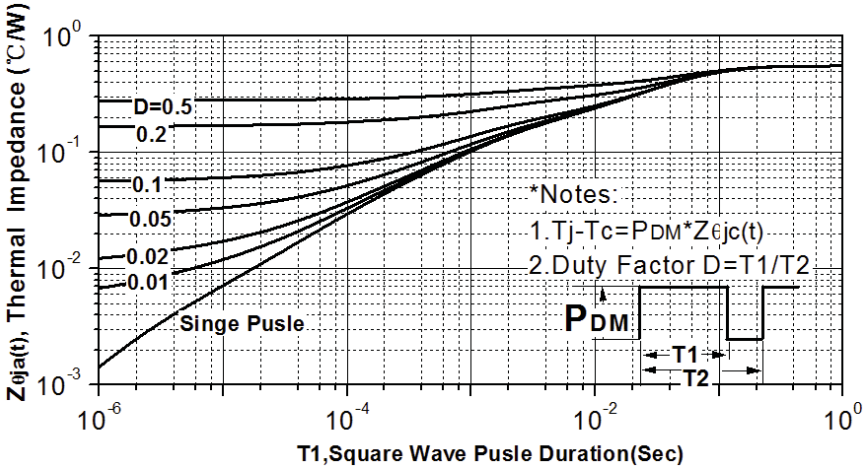


Figure 13. Transient Thermal Response Curve

Test Circurt&Waveform

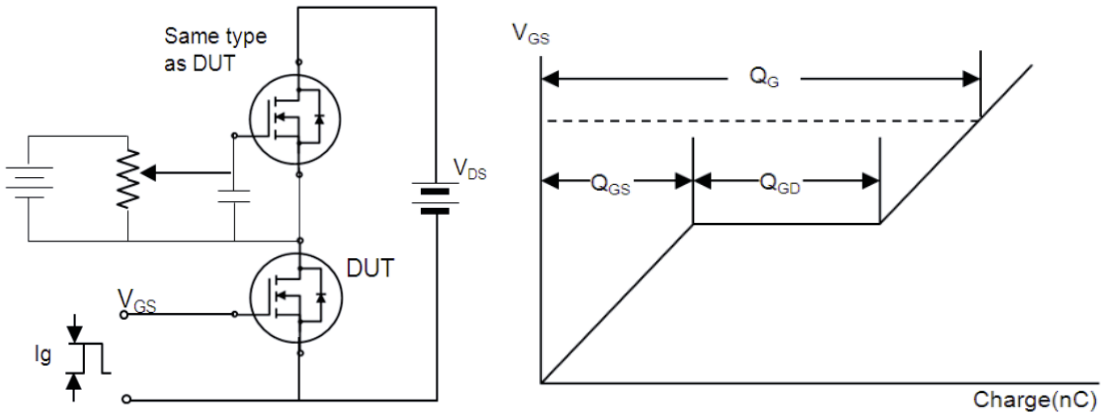


Figure 14. Gate charge test circuit & waveform

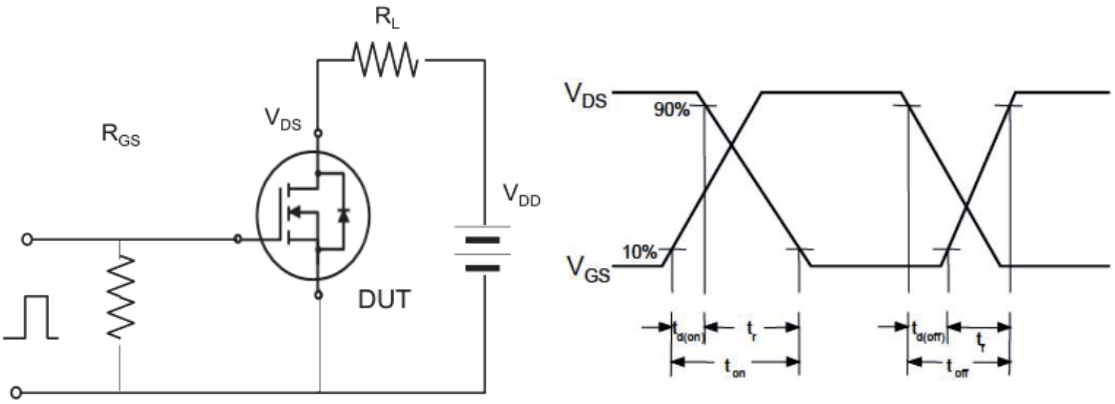
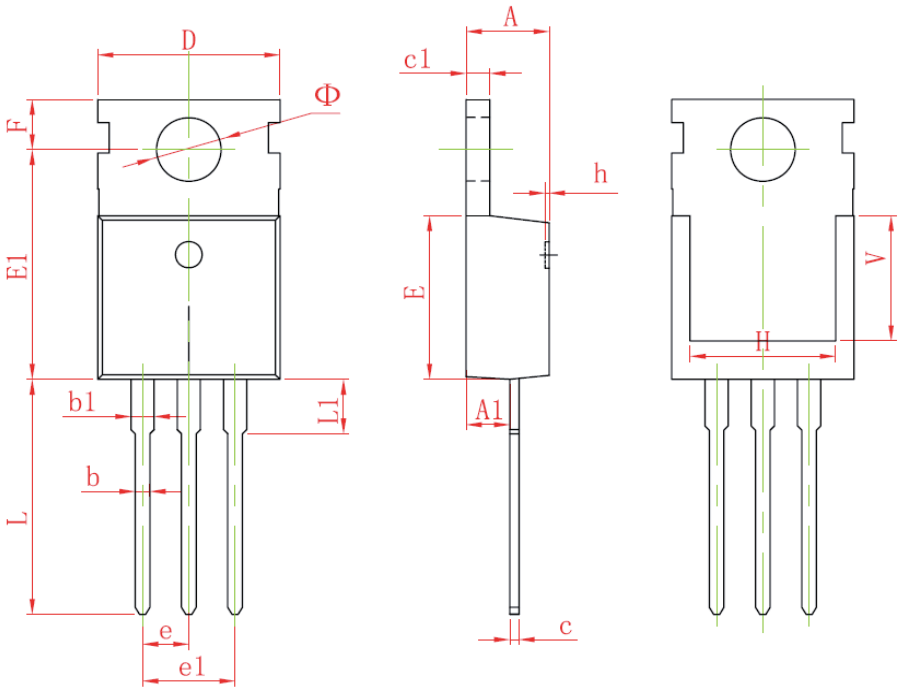


Figure 15. Switching time test circuit & waveform

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