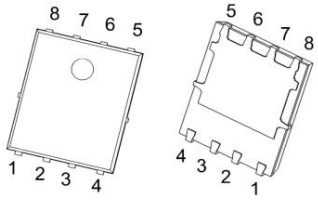
100V N-Channel SGT Power MOSFET

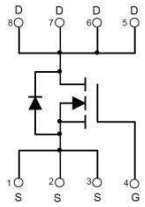
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	4.8mΩ@10V	82A

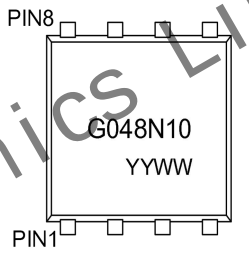
PDFN5*6-8L



Schematic diagram



Marking



G048N10 : Device Code
YY : Year Code
WW : Week Code

Features

- Fast switching
- 100% EAS Guaranteed
- Green device available

Applications

- Motor Drives
- UPS
- DC-DC Converter
- SR
- BMS

Absolute Maximum rating（T_A = 25℃ unless otherwise noted）

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	100	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25°C ,Silicon limit	I_D	90	A
	T_C = 25°C, Package limit		82	
	T_C = 100°C,Silicon limit		55	
Pulsed drain current		I_{DM}	328	A
Avalanche energy[1]		E_{AS}	256	mJ
Power Dissipation		P_D	85	W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.47	℃/W
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~ +150	℃
Soldering temperature, wave soldering only allowed		T_{sold}	260	℃

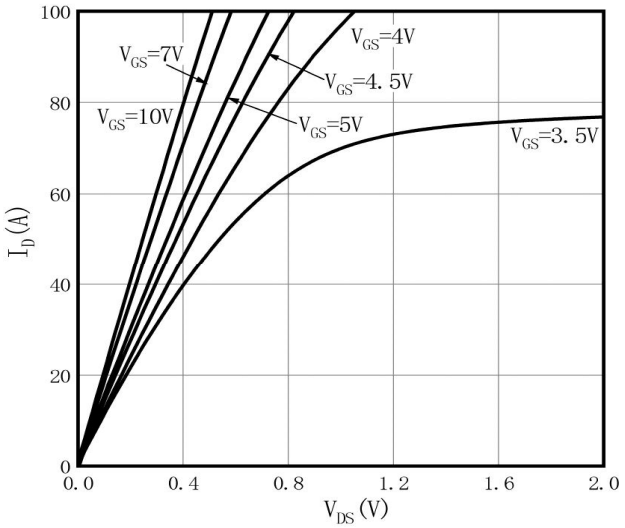
Electrical Characteristics（T_A = 25℃ unless otherwise noted）

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}= 0V, I_D= 250μA	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 100V, V_{GS}= 0V, T_J= 25°C			1	μA
		V_{DS}= 100V, V_{GS}= 0V, T_J= 125°C			100	
Gate - Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}= 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D= 250μA	1.2	1.5	2.2	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS}= 10V, I_D= 50A, T_J= 25℃		4.8	6.0	mΩ
		V_{GS}= 10V, I_D= 50A, T_J= 150℃		7.5		
Forward transconductance	g_{FS}	V_{DS}= 20V, I_D= 40A		75		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}= 50V,V_{GS}= 0V,f= 250KHz		3500		pF
Output Capacitance	C_{oss}			440		
Reverse Transfer Capacitance	C_{rss}			16		
Gate resistance	R_g	V_{DS}= 0V,V_{GS}= 0V, f= 1MHz		1.5		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}= 50V, I_D= 40A, V_{GS}= 10V		57		nC
Gate-source Charge	Q_{gs}			11		
Gate-drain Charge	Q_{gd}			11		
Gate plateau voltage	$V_{plateau}$			3.5		V
Output Charge	Q_{oss}	V_{DS}= 50V, V_{GS}= 0V		55		nC
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 50V, V_{GS}= 10V, I_D= 40A, R_g =10Ω		25		ns
Turn-on Rise Time	t_r			95		
Turn-off Delay Time	$t_{d(off)}$			95		
Turn-off Fall Time	t_f			34		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}= 0V, I_S= 50A			1.1	V
Peak reverse recovery current	I_{rrm}	I_F= 50A, dI/dt= 100A/μs		1.5		A
Reverse Recovery Time	t_{rr}			33		ns
Reverse Recovery Charge	Q_{rr}			31		nC

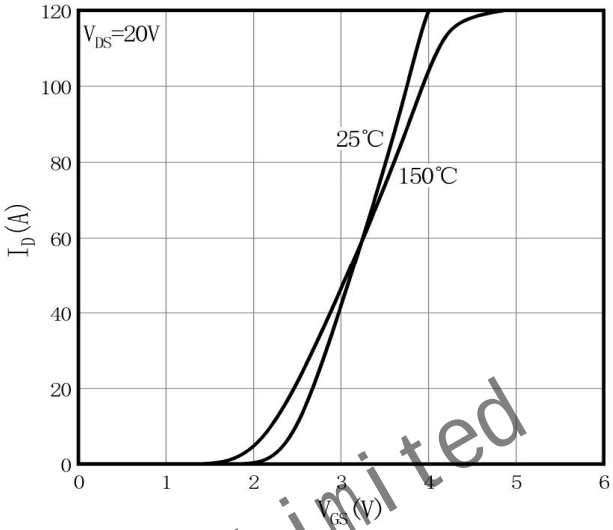
Notes :

1. E_{AS} condition: T_J=25℃,V_{DD}=50V,V_G=10V, R_g=25Ω, L=0.5mH.

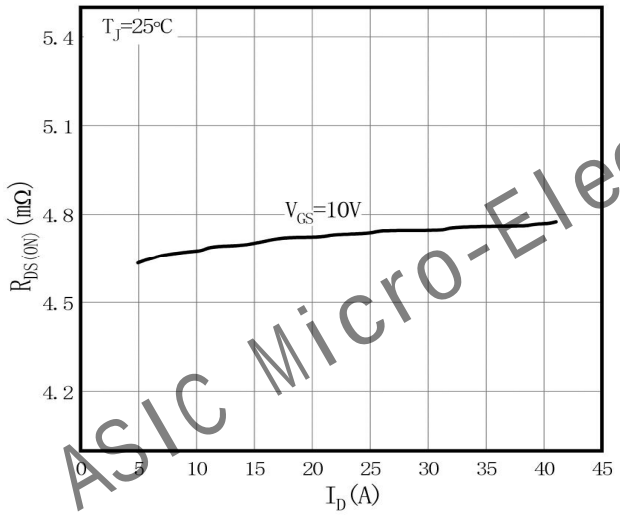
Typical Characteristic



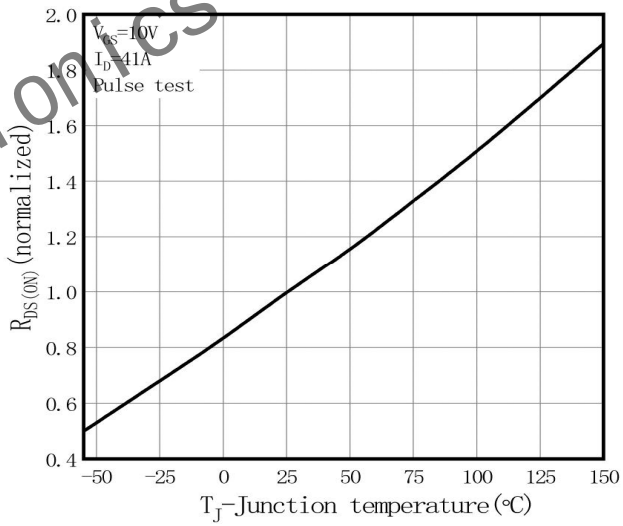
Output Characteristics



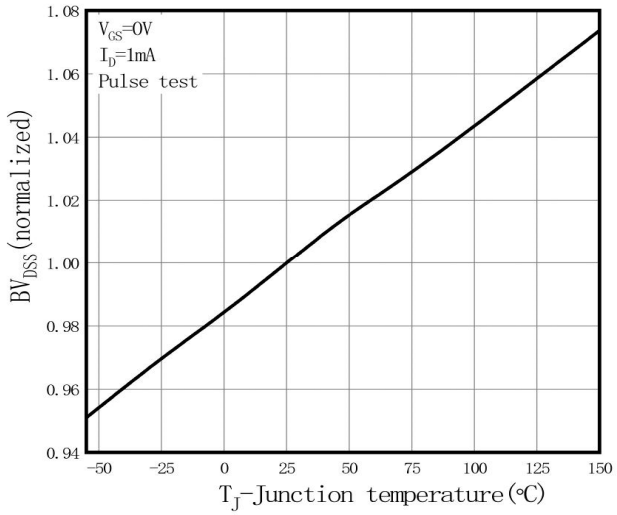
Transfer Characteristic



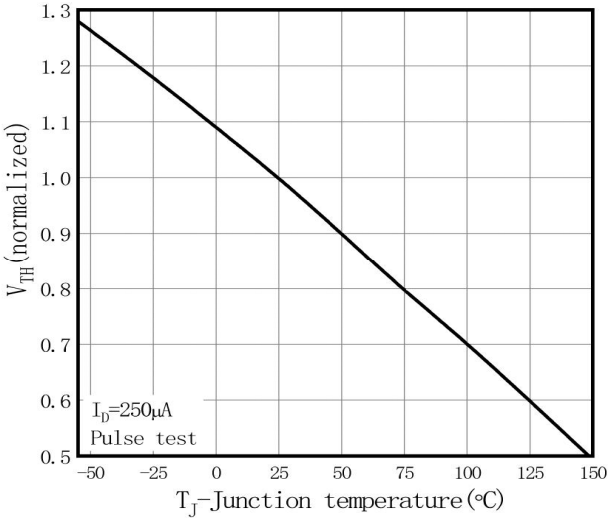
On-Resistance vs. Drain Current



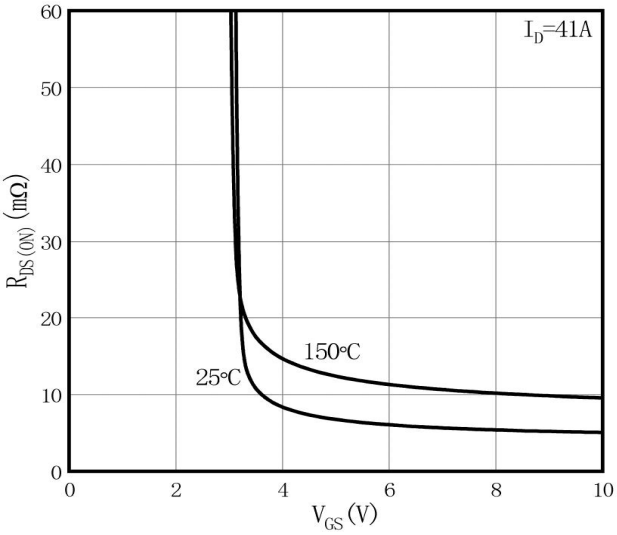
On-Resistance vs. Temperature



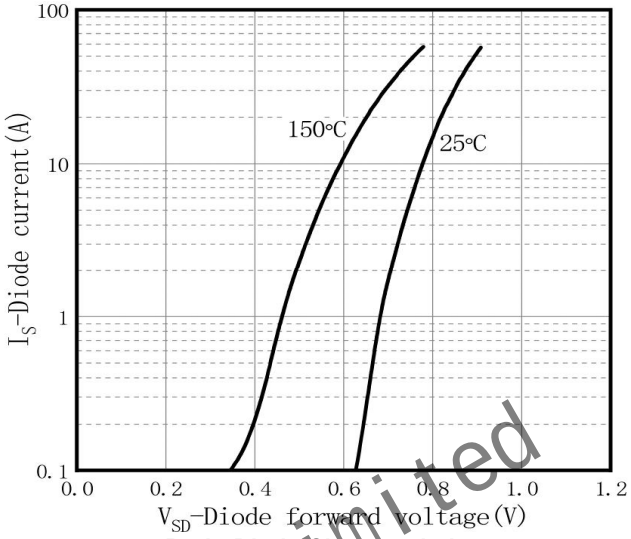
Breakdown Voltage vs. Temperature



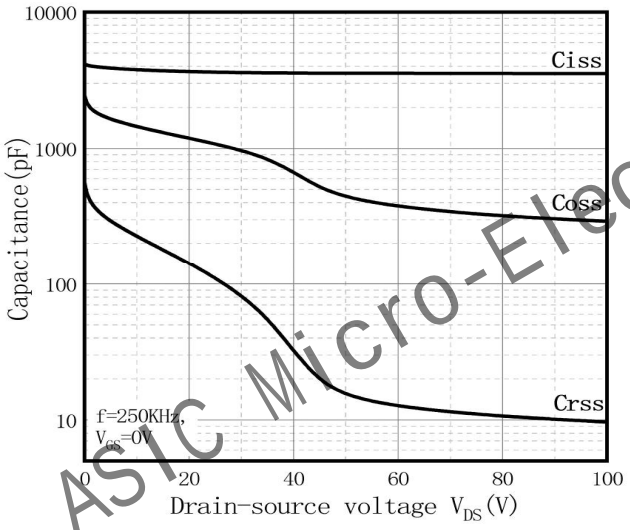
Threshold Voltage vs. Temperature



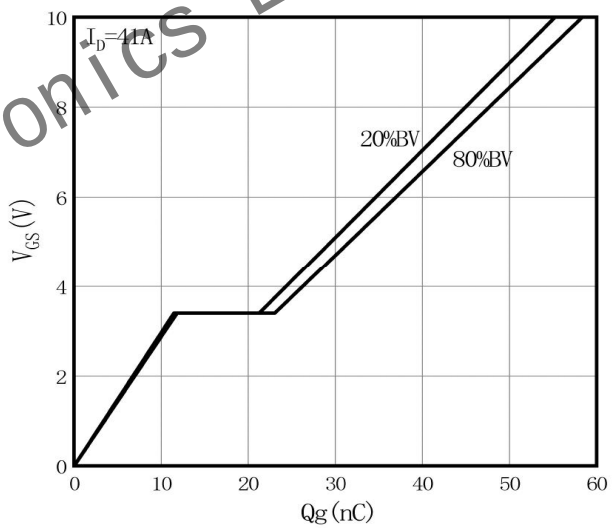
On-Resistance vs. Gate Voltage



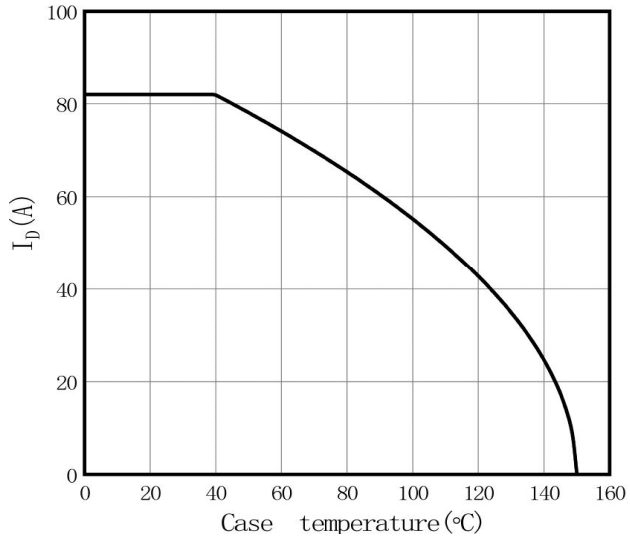
Body-Diode Characteristics



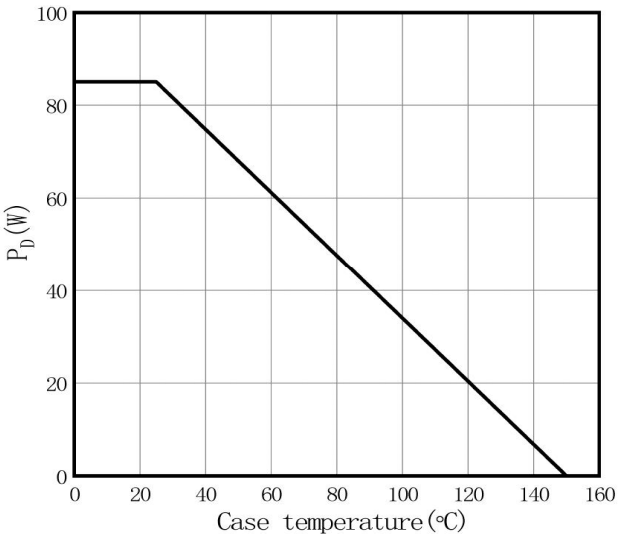
Capacitance Characteristics



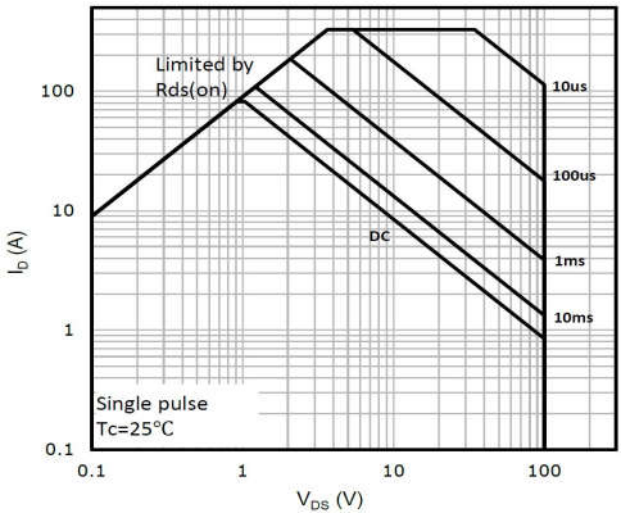
Gate Charge Characteristics



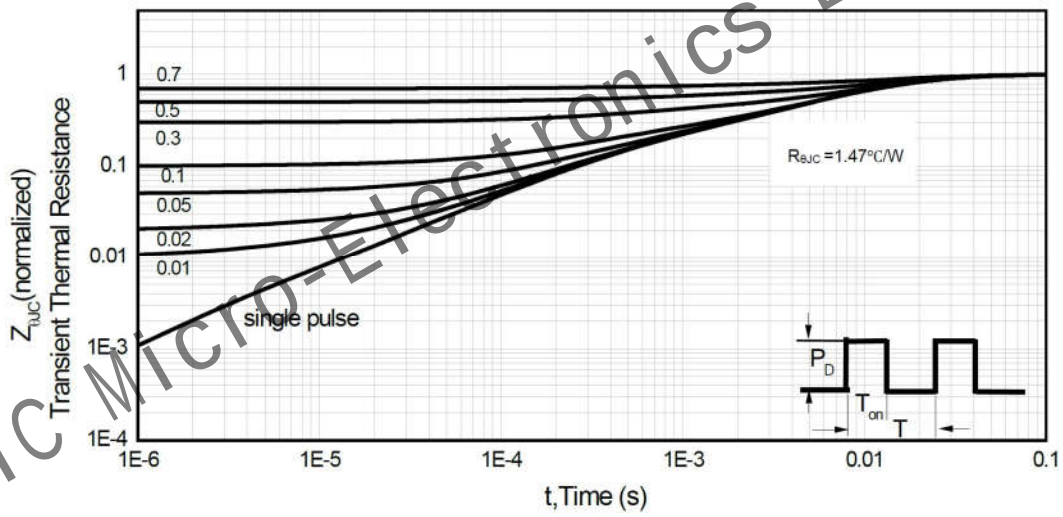
Drain Current



Power Dissipation



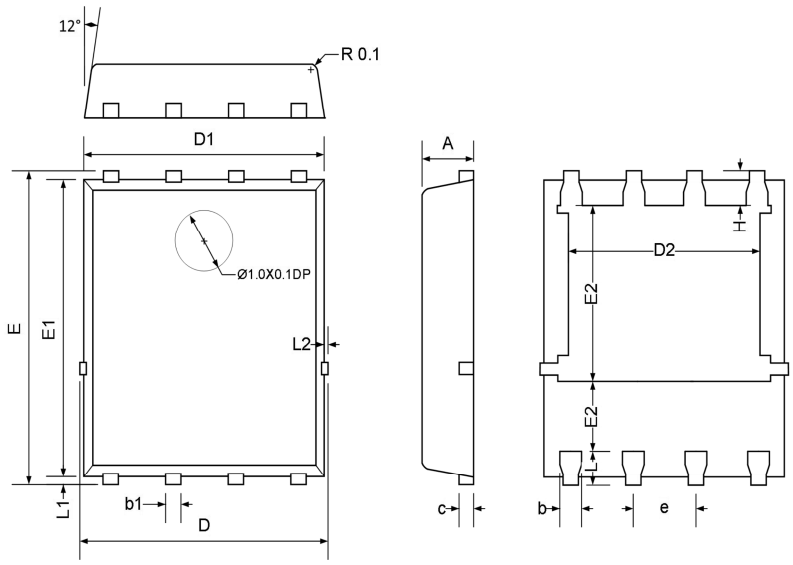
Maximum Safe Operating Area



Normalized Maximum Transient Thermal Impedance (R_{thJC})

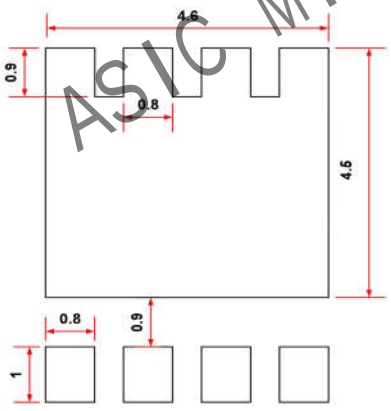
Dimension

PDFN5*6-8L



Symbol	Millimeters		
	Min.	Typ.	Max.
A	0.09	1.00	1.05
b	0.35	0.40	0.45
b1	0.25	0.30	0.35
c	0.21	0.25	0.34
D	4.90	5.00	5.10
D1	4.80	4.90	5.00
D2	3.82	3.96	4.11
e	1.17	1.270	1.370
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	3.18	3.3	3.54
H	0.51	0.61	0.71
K	1.1	—	—
L	0.51	0.61	0.71
L1	0.07	0.125	0.2
L2	—	—	0.10

Recommended Land Pattern



Note:

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference only
4. Unit: mm