

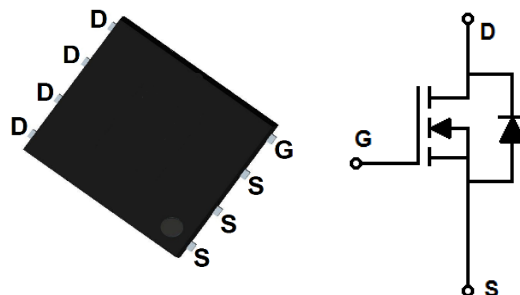
Features

- *N-Channel, Low $R_{DS(on)}$ @ $V_{GS}=10V$*
- *10V Logic Level Control*
- *100% UIS Tested*
- *Pb-Free, Green Device Available*

Applications

- *Quick Charger*
- *Load Switch*
- *Industrial power supplies*
- *Telecom*
- *Optimized for Power Management Applications*

$V_{(BR)DSS}$	$R_{DS(on)}$ Typ	I_D Max
60V	3.5m Ω @ 10V	95A
	5.5m Ω @ 4.5V	


Order Information
PDFN5X6

Product	Package	Marking	Packing
SIR670DP-T1-GE3-CN	PDFN5X6	3R606M	5000PCS/Reel

Absolute Maximum Ratings

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Symbol	Parameter		Rating	Unit
Common Ratings (T _J =25°C Unless Otherwise Noted)				
V _{GS}	Gate-Source Voltage		±20	V
V _{(BR)DSS}	Drain-Source Breakdown Voltage		60	V
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-50 to 150	°C
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested①	T _C =25°C	350	A
I _S	Diode continuous forward current	T _C =25°C	95	A
I _D	Continuous Drain Current	T _C =25°C	95	A
		T _C =70°C	76	
P _D	Maximum Power Dissipation	T _C =25°C	83	W
EAS	Avalanche energy, single pulsed ②		194	mJ
R _{θC}	Thermal Resistance-Junction to Case		1.5	°C/W

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	65	–	–	V
I _{DSS}	Zero Gate Voltage Drain Current(T _C =25°C)=	V _{DS} =60V, V _{GS} =0V	–	–	1	μA
	Zero Gate Voltage Drain Current(T _C 125°C)	V _{DS} =48V, V _{GS} =0V	–	–	100	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	–	–	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.	2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance③	V _{GS} =10V, I _D =15A	–	53.	4.5	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance③	V _{GS} =4.5V, I _D =8A	–	55.	7.5	mΩ
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated)				5		
C _{iss}	Input Capacitance	V _{DS} =35V, V _{GS} =0V, f=1MHz	–	2820	–	pF
C _{oss}	Output Capacitance		–	1030	–	pF
C _{rss}	Reverse Transfer Capacitance		–	60	–	pF
R _g	Gate Resistance	f=1MHz		2.8		Ω
Q _g	Total Gate Charge	V _{DS} =30V I _D =20A, V _{GS} =10V	–	56.1	–	nC
Q _{gs}	Gate Source Charge		–	8.9	–	nC
Q _{gd}	Gate Drain Charge		–	14.4	–	nC
Switching Characteristics @ T _J = 25°C (unless otherwise stated)						
t _{d(on)}	Turn on Delay Time	V _{DD} =30V, I _D =5A, R _G =3.3Ω, V _{GS} =10V	–	10.	–	ns
t _r	Turn on Rise Time		–	616.	–	ns
t _{d(off)}	Turn Off Delay Time		-	5	–	ns
t _f	Turn Off Fall Time		–	48	–	ns
Source Drain Diode Characteristics @ T _J = 25°C (unless otherwise stated)				78		
t _{rr}	Reverse Recovery Time	I _{SD} =20A, V _{GS} =0V di/dt=500A/μs	–	45	–	nS
Q _r	Reverse Recovery Charge		–	163	–	nC
V _{SD}	Forward on voltage③	I _{SD} =15A, V _{GS} =0V	–	0.78	1.2	V

Notes: ① Pulse width limited by maximum allowable junction temperature

② Limited by T_{Jmax}, starting T_J = 25°C, L = 0.3mH, R_G = 25Ω, I_{AS} = 36A, V_{GS} = 10V. Part not recommended for use above this value

③ Pulse width ≤ 300μs; duty cycle ≤ 2%.

Typical Characteristics

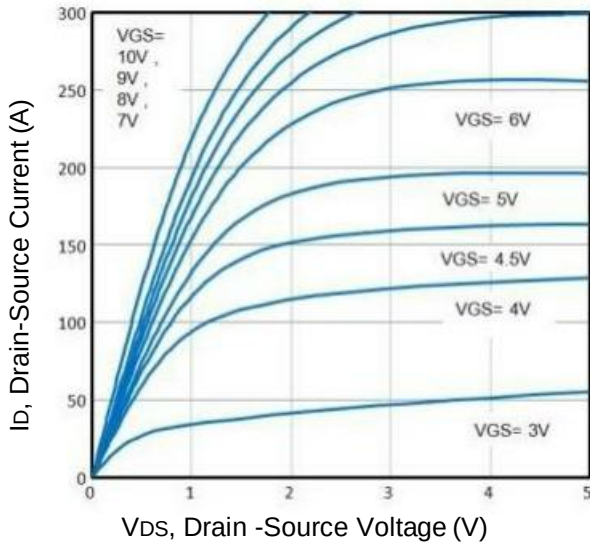


Fig1. Typical Output Characteristics

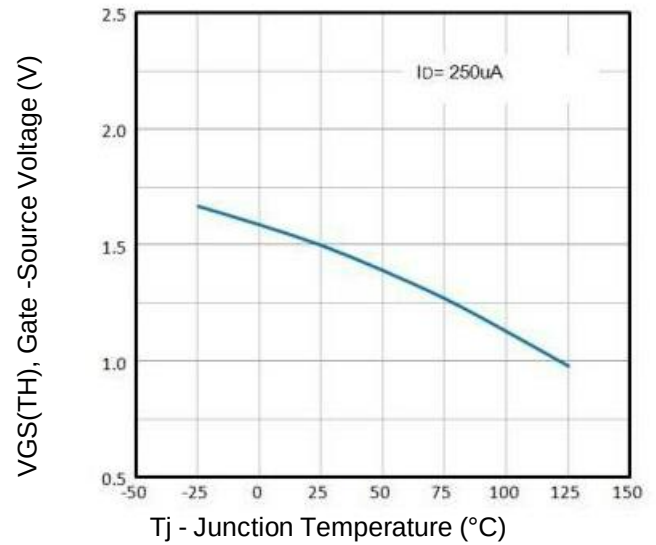


Fig2. Normalized Threshold Voltage Vs. Temperature

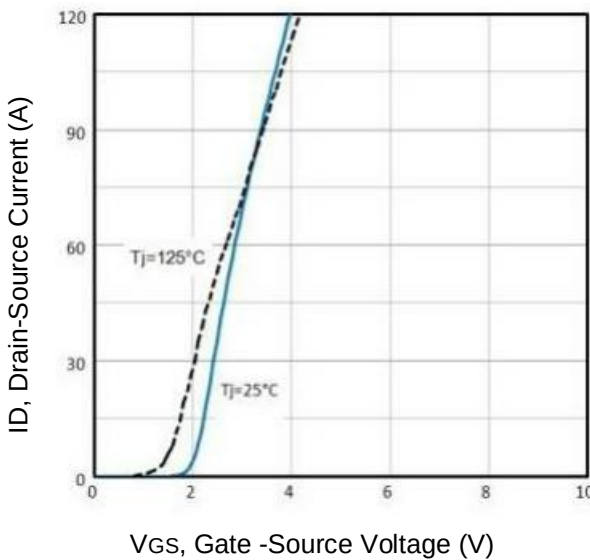


Fig3. Typical Transfer Characteristics

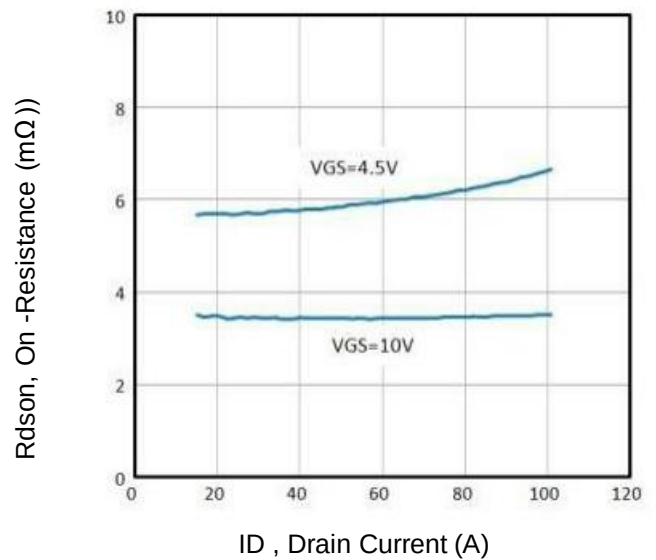


Fig4. On-Resistance vs. Drain Current and Gate Voltage

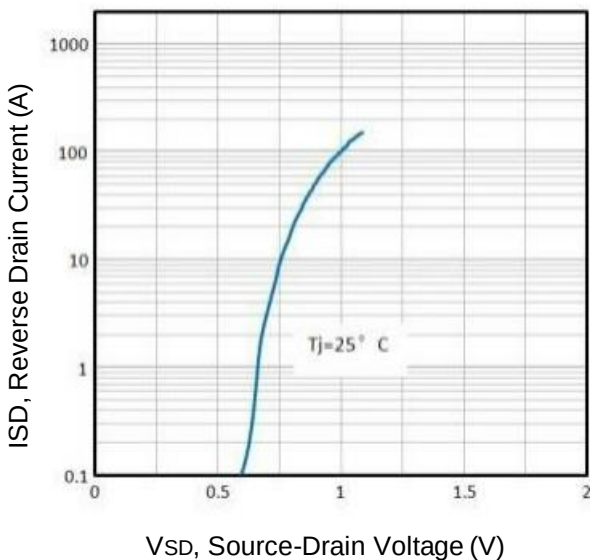


Fig5. Typical Source-Drain Diode Forward Voltage

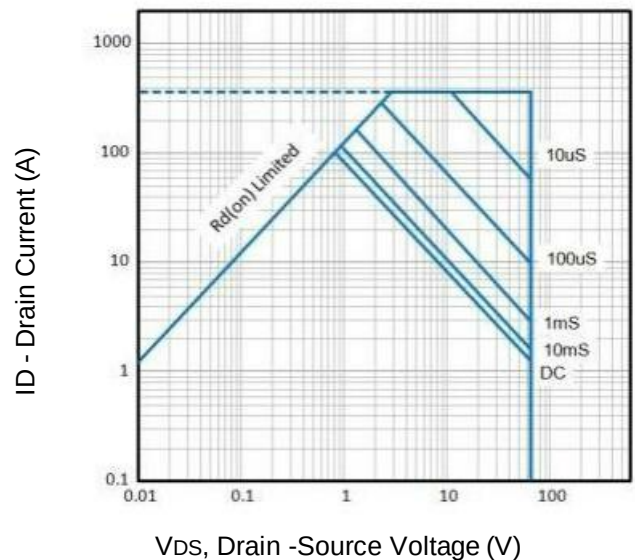


Fig6. Maximum Safe Operating Area

Typical Characteristics

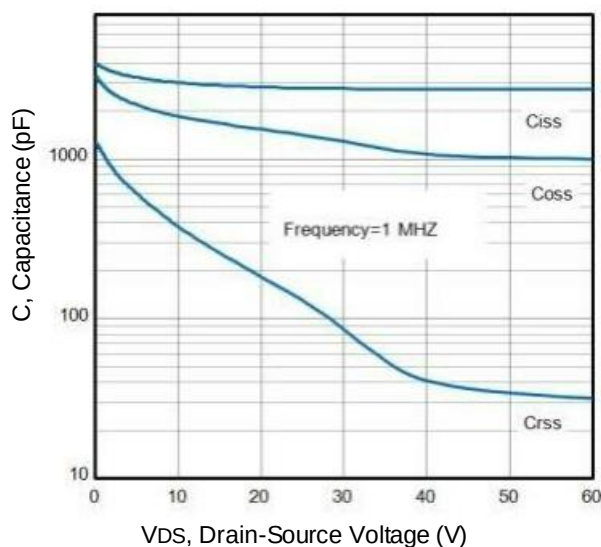


Fig7. Typical Capacitance Vs. Drain-Source Voltage

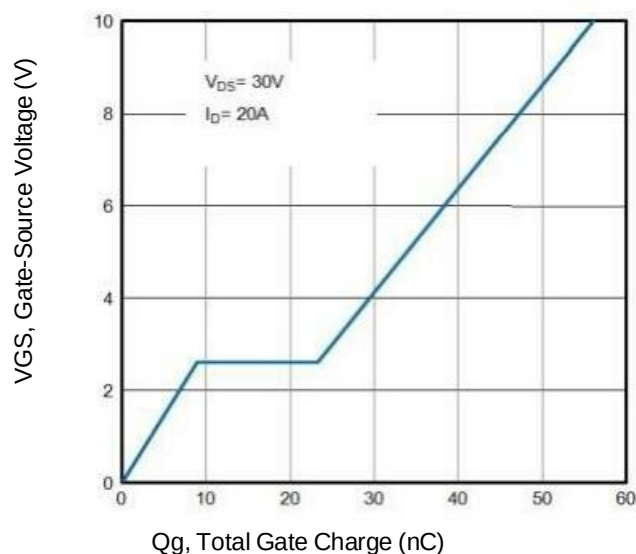


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

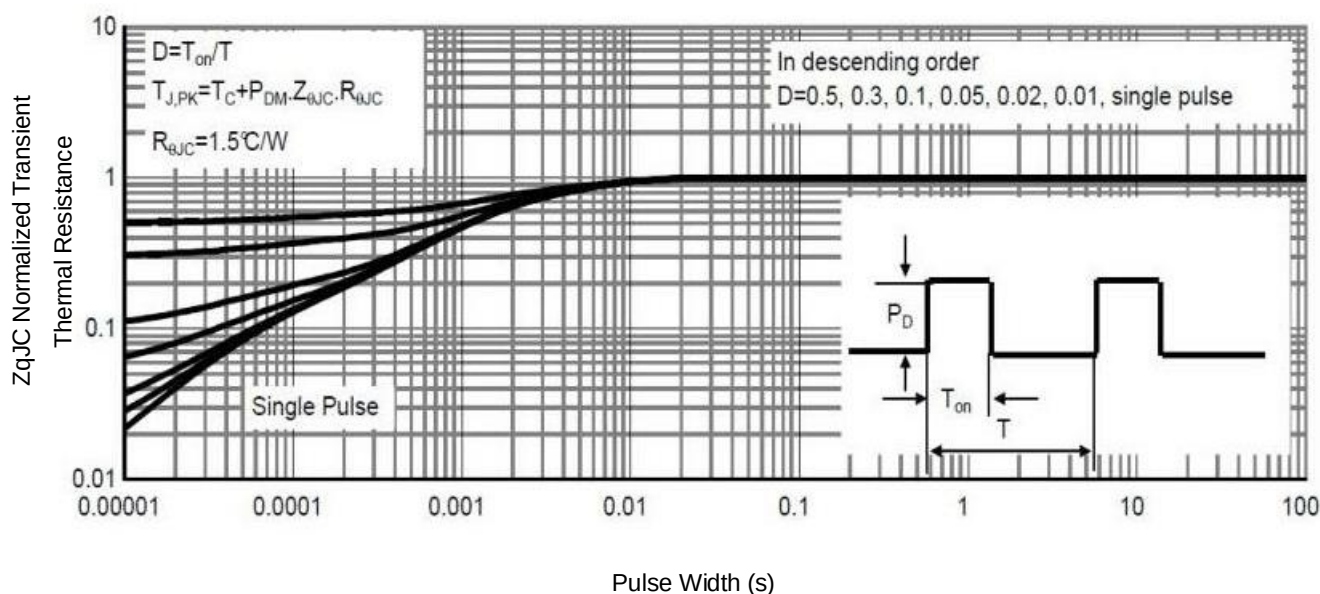


Fig9. Normalized Maximum Transient Thermal Impedance

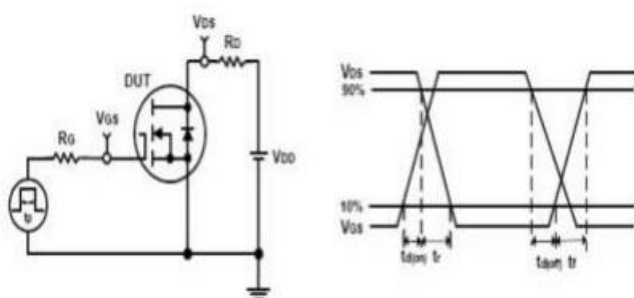


Fig10. Switching Time Test Circuit and waveforms

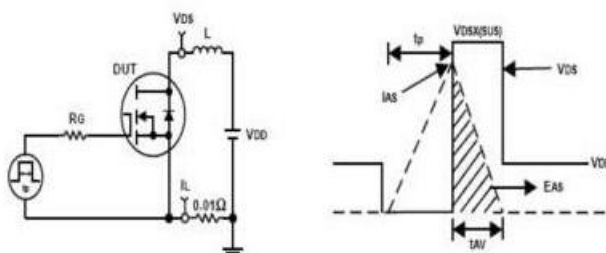
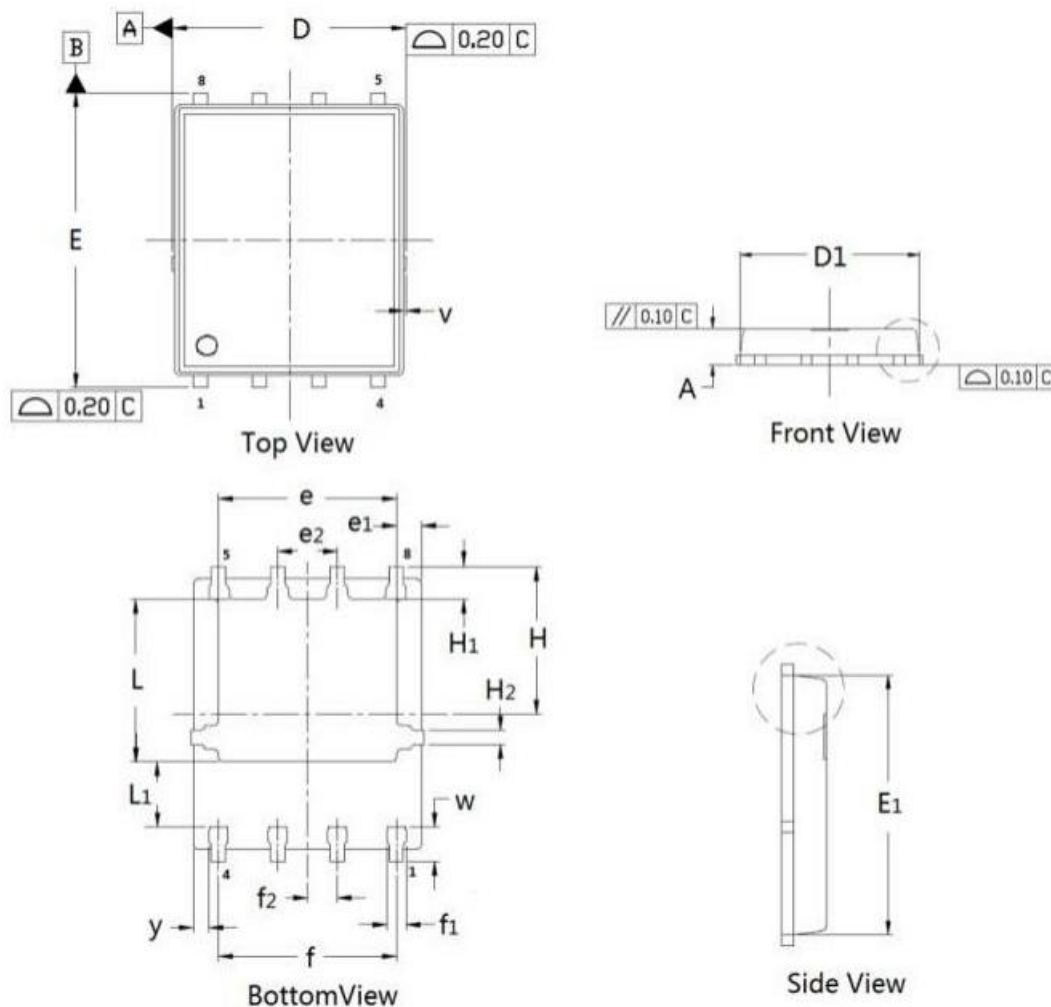


Fig11. Unclamped Inductive Test Circuit and waveforms

PDFN5X6 Mechanical Data

DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.02	1.10	D	4.90	4.98	5.10
D1	4.80	4.89	5.00	E	6.00	6.11	6.20
E1	5.65	5.74	5.85	e	3.72	3.80	3.92
e1	--	0.54	--	e2	--	1.27	--
f	--	3.82	--	f1	0.31	0.37	0.51
f2	--	0.64	--	H	--	3.15	--
H1	0.59	0.63	0.79	H2	0.26	0.28	0.32
L	3.38	3.45	3.58	L1	--	1.39	--
v	--	0.13	--	w	0.64	0.68	0.84
y	--	0.34	--		--		--

NOTICE

The information presented in this document is for reference only. Involving product optimization and productivity improvement, ChipNobo reserves the right to adjust product indicators and upgrade some technical parameters. ChipNobo is entitled to be exempted from liability for any delay or non-delivery of the information disclosure process that occurs.

本文件中提供的信息仅供参考。涉及产品优化和生产效率改善，ChipNobo 有权调整产品指标和部分技术参数的升级，所出现信息披露过程存在延后或者不能送达的情形，ChipNobo 有获免责权。

The product listed herein is designed to be used with residential and commercial equipment, and do not support sensitive items and specialized equipment in areas where sanctions do exist. ChipNobo Co., Ltd or anyone on its behalf, assumes no responsibility or liability for any damages resulting from improper use.

此处列出的产品旨在民用和商业设备上使用，不支持确有制裁地区的敏感项目和特殊设备，ChipNobo 有限公司或其代表，对因不当使用而造成的任何损害不承担任何责任。

For additional information, please visit our website <http://www.chipnobo.com>, or consult your nearest Chipnobo sales office for further assistance.

欲了解更多信息，请访问我们的网站 <http://www.chipnobo.com>，或咨询离您最近的 Chipnobo 销售办事处以获得进一步帮助。