PGT10N015H

100V/420A N-Channel Power MOSFET

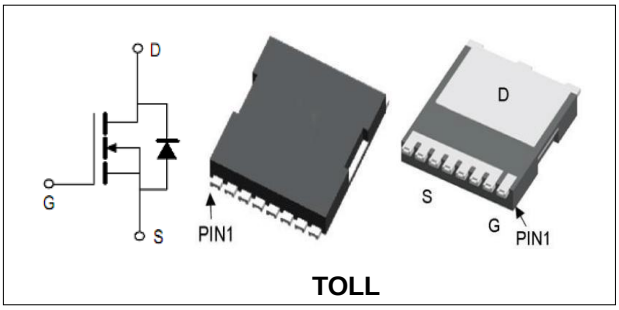
Features

- Ultra Low Gate Charge cause lower driving requirements
- 100% Avalanche Tested

V_{DS}	100	V
I_D (Package limit)	420	A
$R_{DS(on),Typ}$ @V_{GS}=10V	1.2	mΩ

Applications

- Synchronous Rectification for AC/DC Quick Charger
- Battery management
- UPS



TOLL

Order Information

Product	Package	Marking	Reel Size	Reel	Carton
PGT10N015H	TOLL	PGT10N015H	13inch	1500PCS	12000PCS

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		100	V
V_{GS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		175	°C
T_{STG}	Storage Temperature Range		-55 to 175	°C
I_S	Diode Continuous Forward Current	T_C =25°C	420	A
Mounted on Large Heat Sink				
E_{AS}	Single Pulse Avalanche Energy (Note1)		2450	mJ
I_{DM}	Pulse Drain Current Tested (Note2)	T_C =25°C	1680	A
I_D	Continuous Drain current (Silicon limit)	T_C =25°C	433	A
	Continuous Drain current (Package limit)		420	
P_D	Maximum Power Dissipation	T_C =25°C	536	W
$R_{\theta Jc}$	Thermal Resistance Junction−to−Case		0.28	°C/W
$R_{\theta JA}$	Thermal Resistance Junction−to−Ambient (Note3)		45	°C/W

100V/420A N-Channel Power MOSFET

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	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain current	V_{DS}=100V,V_{GS}=0V	--	--	1	μA
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	2	--	4	V
$R_{DS(ON)}$	Drain-Source On-State Resistance (Note4)	V_{GS}=10V, I_D=50A	--	1.2	1.45	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated) (Note5)						
C_{iss}	Input Capacitance	V_{DS}=50V, V_{GS}=0V, f=100kHz	--	9780	--	pF
C_{oss}	Output Capacitance		--	3510	--	pF
C_{rss}	Reverse Transfer Capacitance		--	52	--	pF
Q_g	Total Gate Charge	V_{DS}=50V, I_D=100A, V_{GS}=10V	--	152	--	nC
Q_{gs}	Gate-Source Charge		--	55	--	nC
Q_{gd}	Gate-Drain Charge		--	47	--	nC
R_G	Gate resistance	f=1MHz	--	1	--	Ω
Switching Characteristics (Note5)						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=50V, R_G=10Ω, I_D=100A, V_{GS}=10V	--	88	--	ns
t_r	Turn-on Rise Time		--	226	--	ns
$t_{d(off)}$	Turn-off Delay Time		--	88	--	ns
t_f	Turn-off Fall Time		--	76	--	ns
Source- Drain Diode Characteristics @ T_j = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	I_{SD}=50A,V_{GS}=0V	--	--	1.2	V
t_{rr}	Reverse Recovery Time	I_S=100A, di/dt=100A/μs	--	160	--	nS
Q_{rr}	Reverse Recovery Charge		--	768	--	nC

Note:

1. Limited by TJmax, starting T_j = 25° C, R_G = 25Ω, V_{DD} =40V, V_{GS} =10V. Part not recommended for use above this value.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C
4. Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
5. Guranteed by design, not subject to production testing.

100V/420A N-Channel Power MOSFET

Typical Characteristics

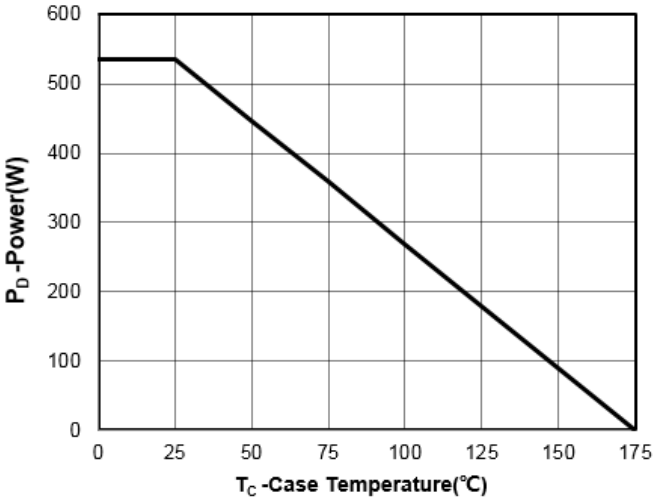


Figure1：Power De-rating

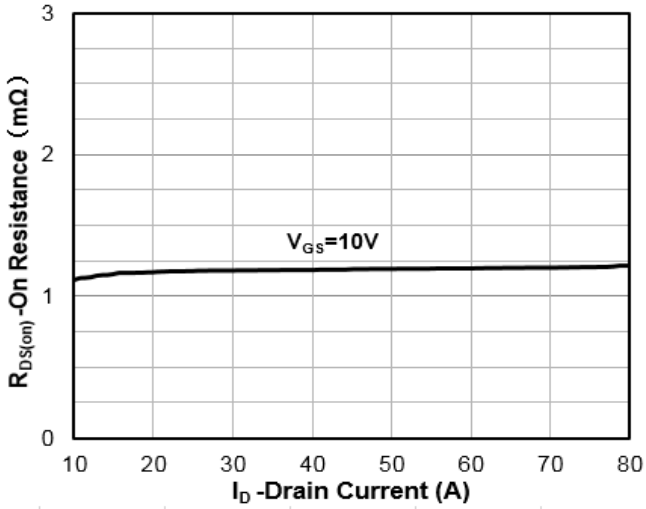


Figure2：Rdson- Drain Current

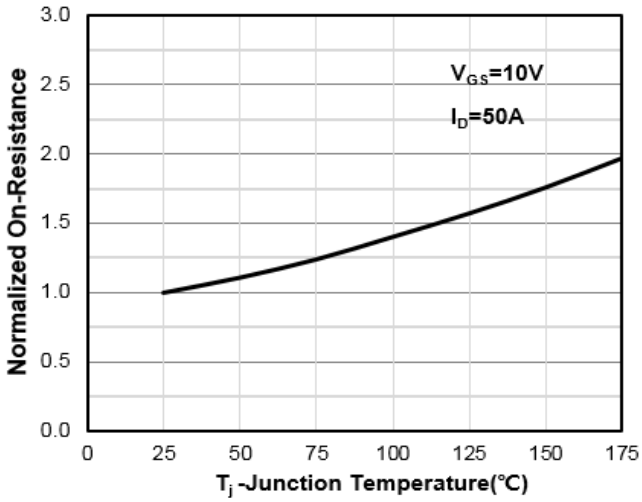


Figure3：Rdson-Junction Temperature

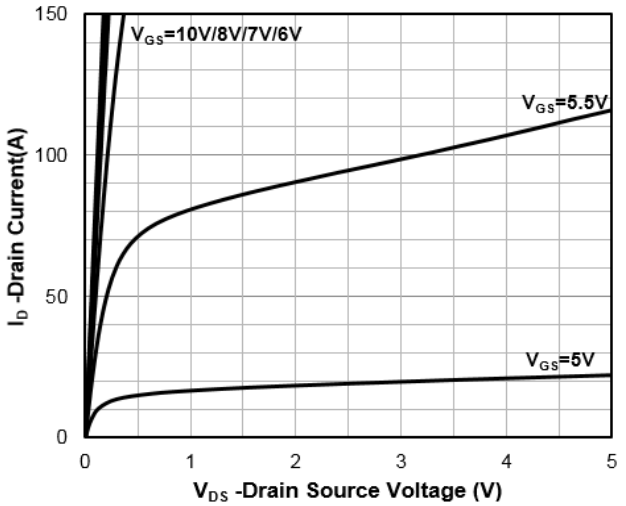


Figure4： Output Characteristics

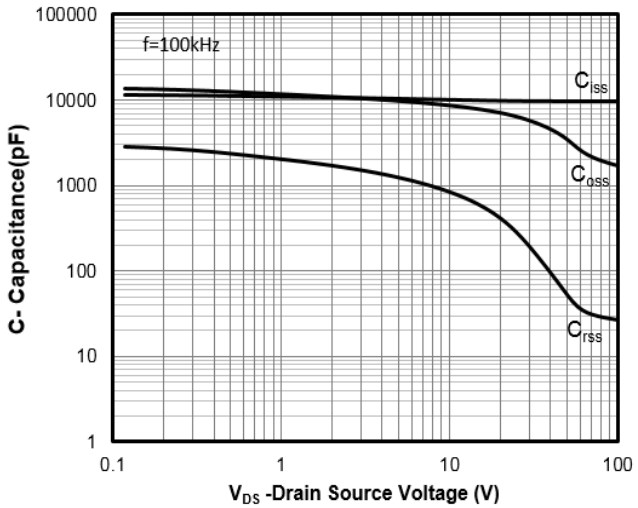


Figure5：Capacitance vs V_{DS}

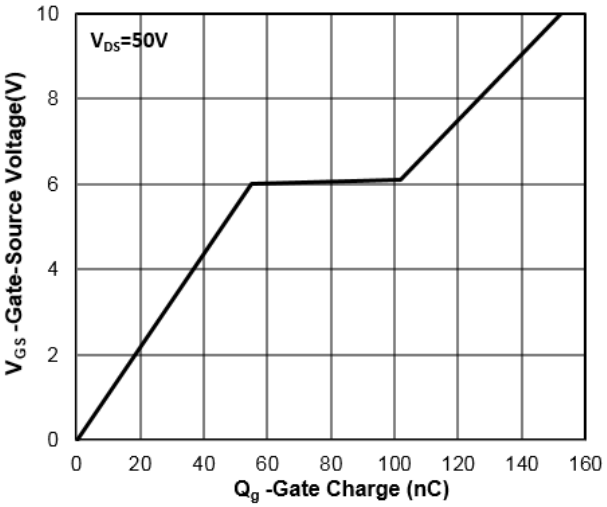


Figure6：Gate Charge

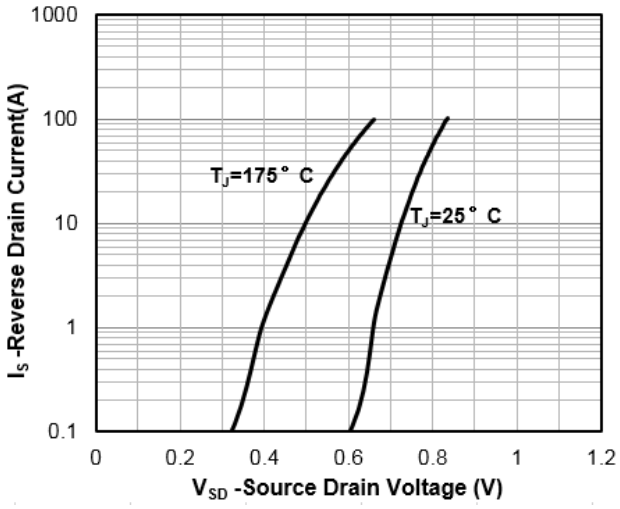


Figure7：Typical Source-Drain Diode Forward Voltage

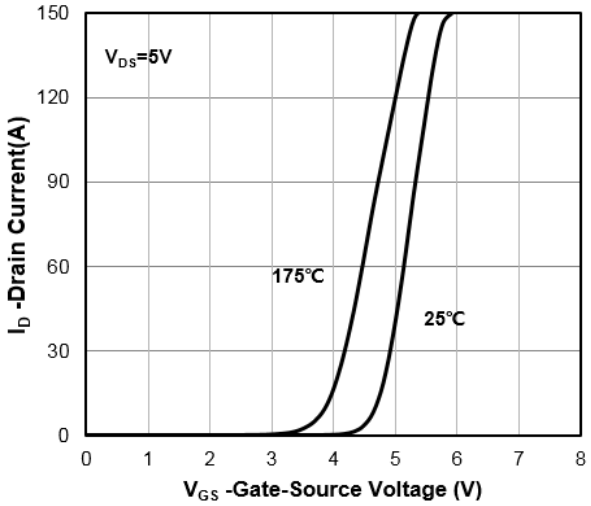


Figure8：Transfer Characteristics

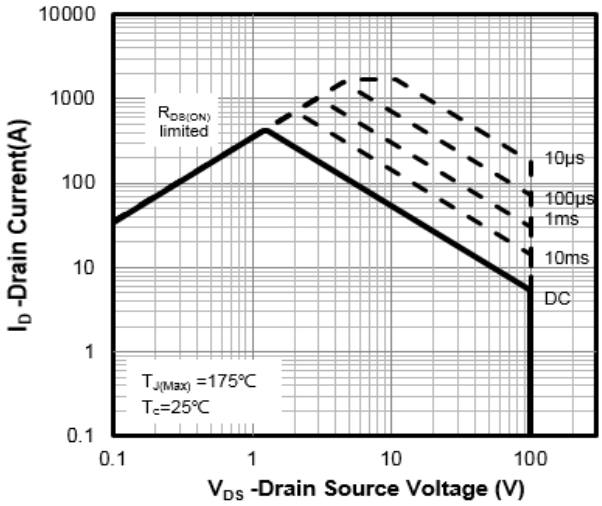


Figure9：Safe Operation Area

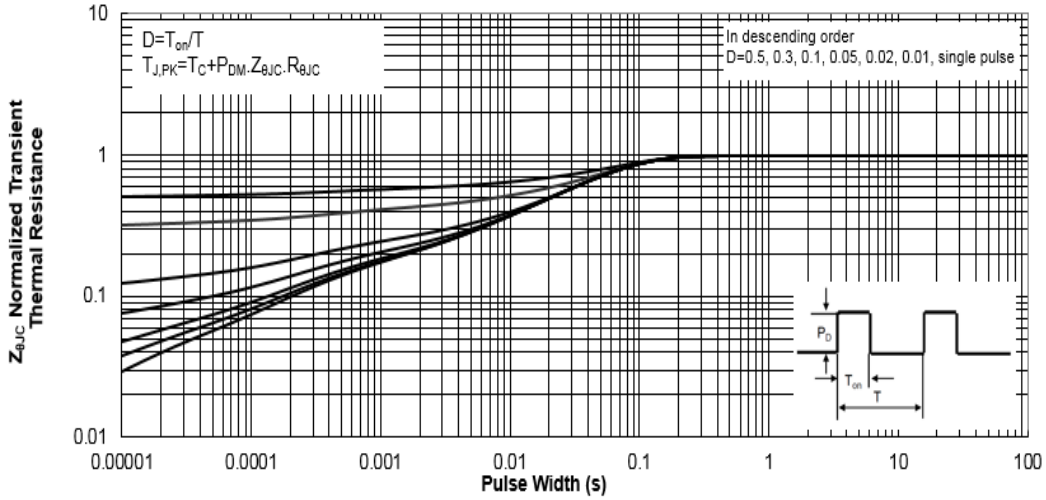


Figure10：Normalized Maximum Transient Thermal Impedance

Test Circuit and Waveform:

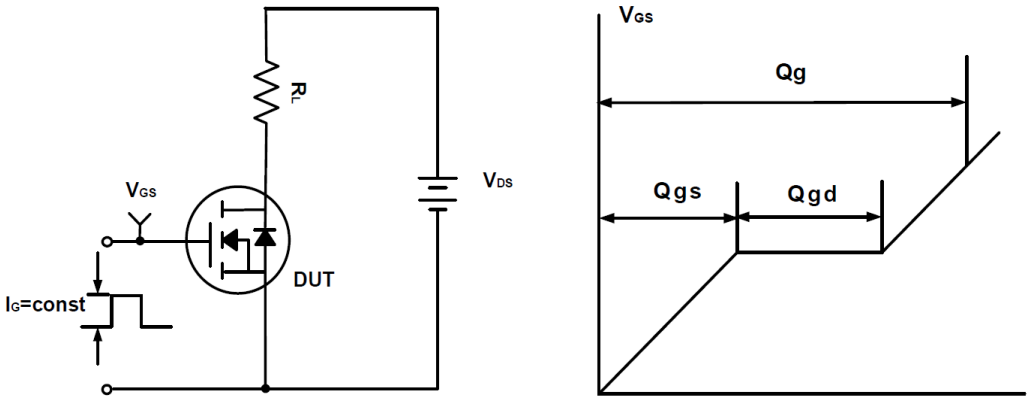


Figure A Gate Charge Test Circuit &Waveforms

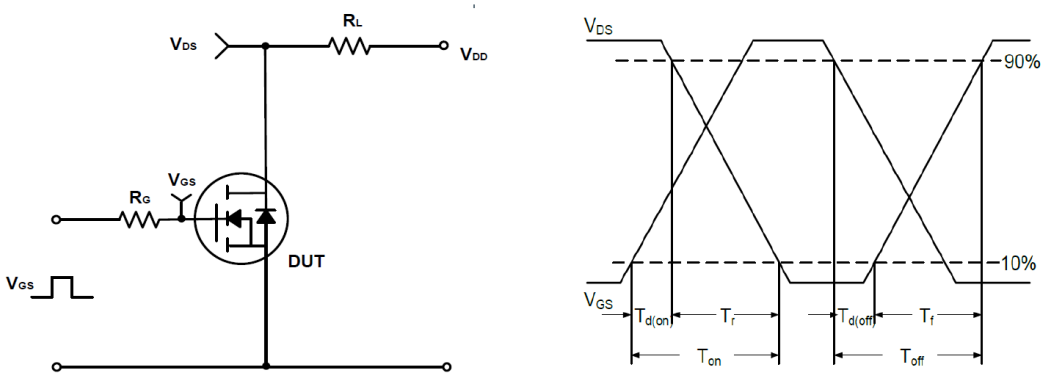


Figure B Switching Test Circuit & Waveforms

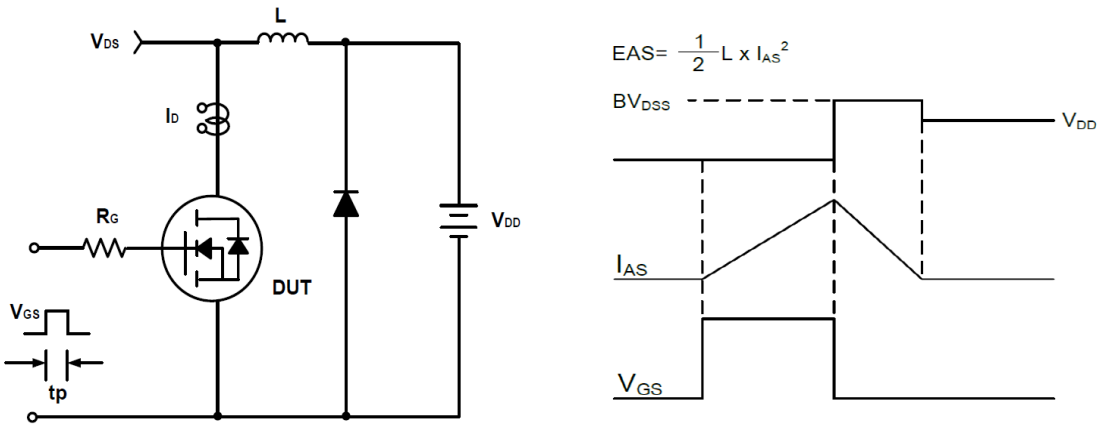
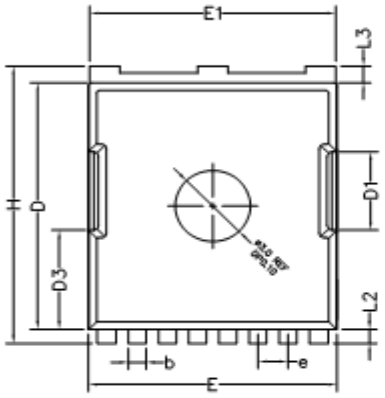


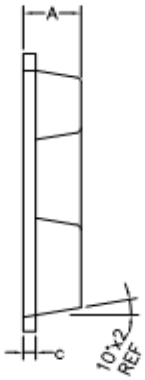
Figure C Unclamped Inductive Switching Circuit & Waveforms

100V/420A N-Channel Power MOSFET

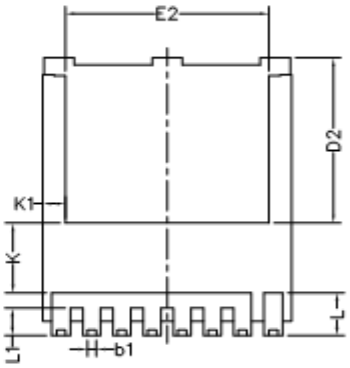
TOLL Package Outline Dimensions (Units: mm)



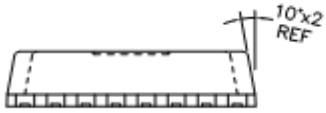
TOP VIEW



SIDE VIEW



BOTTEM VIEW



SIDE VIEW

COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	2.200	2.300	2.400
b	0.600	0.700	0.900
b1	0.300	–	0.500
c	0.400	0.500	0.600
D	10.280	10.380	10.480
D1	3.200	3.300	3.400
D2	6.850	6.950	7.050
D3		4.18REF	
E	9.800	9.900	10.000
E1	9.700	9.800	9.900
E2	8.000	8.100	8.200
e		1.200BSC	
H	11.480	11.680	11.880
L	1.600	1.800	2.100
L1	1.000	1.150	1.300
L2		0.600 TYPE	
L3		0.600 TYPE	
K		2.900 TYPE	
K1		0.900 TYPE	