



100V/371A N-Channel Power MOSFET

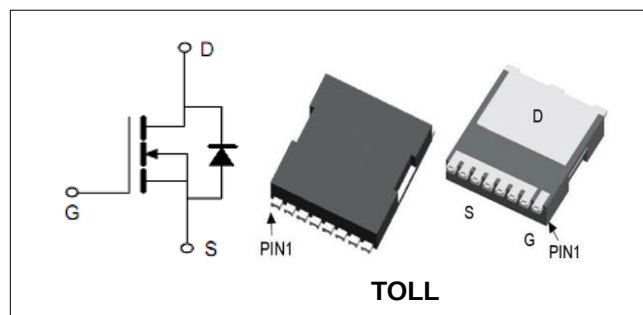
Features

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

V_{DS}	100	V
I_D	371	A
$R_{DS(on), Typ} @ V_{GS}=10V$	1.05	m Ω

Applications

- Load Switch
- PWM Application
- Power Management



Order Information

Product	Package	Marking	Reel Size	Reel	Carton
PGT10N013H	TOLL	PGT10N013H	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		150	°C
T _{stg}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _C =25°C	298	A
Mounted on Large Heat Sink				
E _{AS}	Single Pulse Avalanche Energy (Note1)		2600	mJ
I _{DM}	Pulse Drain Current Tested (Note2)	T _C =25°C	1300	A
I _D	Continuous Drain current(Silicon limit)	T _C =25°C	371	A
P _D	Maximum Power Dissipation	T _C =25°C	357	W
R _{θJC}	Thermal Resistance Junction-to-Case,		0.35	°C/W



100V/371A 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 (Note3)	V _{GS} =10V, I _D =50A	--	1.05	1.2	mΩ
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated) (Note4)						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	--	12200	--	pF
C _{oss}	Output Capacitance		--	4850	--	pF
C _{rss}	Reverse Transfer Capacitance		--	96	--	pF
Q _g	Total Gate Charge	V _{DS} =50V, I _D =50A, V _{GS} =10V,	--	199	--	nC
Q _{gs}	Gate-Source Charge		--	60	--	nC
Q _{gd}	Gate-Drain Charge		--	52	--	nC
R _G	Reverse Transfer Capacitance	f=1MHz	--	4.5	--	Ω
Switching Characteristics (Note4)						
t _{d(on)}	Turn-on Delay Time	V _{DS} =50V, I _D =50A, R _G =3Ω, V _{GS} =10V,	--	38	--	ns
t _r	Turn-on Rise Time		--	63	--	ns
t _{d(off)}	Turn-off Delay Time		--	144	--	ns
t _f	Turn-off Fall Time		--	84	--	ns
Source- Drain Diode Characteristics@ T _J = 25°C (unless otherwise stated)						
V _{SD}	Forward on Voltage	I _S =75A,V _{GS} =0V,	--	--	1.2	V

Note:

- Limited by T_{Jmax} , starting $T_J = 25^\circ\text{C}$, $R_\theta = 25\Omega$, $V_D = 50V$, $V_{GS} = 10V$. Part not recommended for use above this value.
- Repetitive Rating: Pulse width limited by maximum junction temperature.
- Pulse Test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.



100V/371A N-Channel Power MOSFET

Typical Characteristics

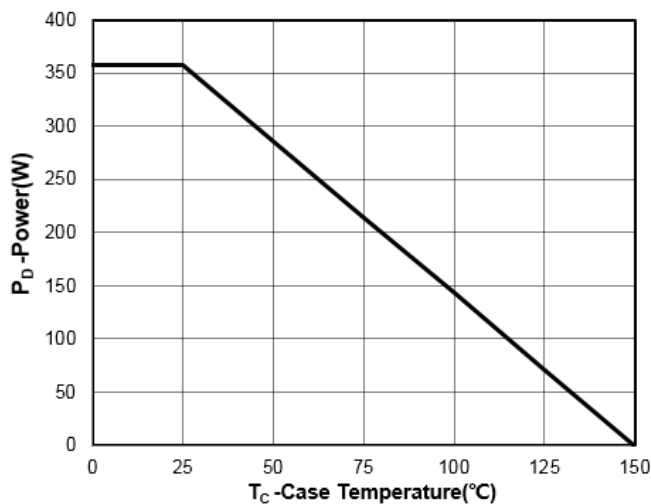


Figure1: Power De-rating

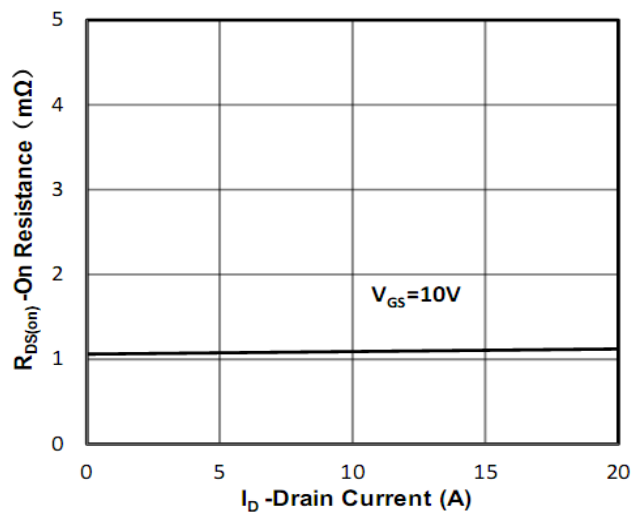
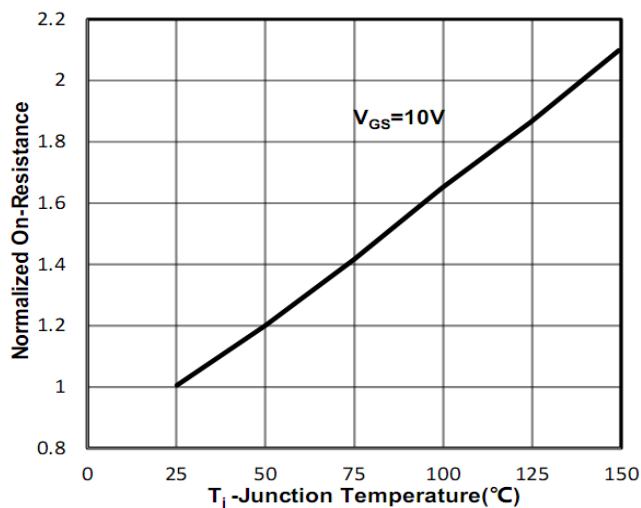
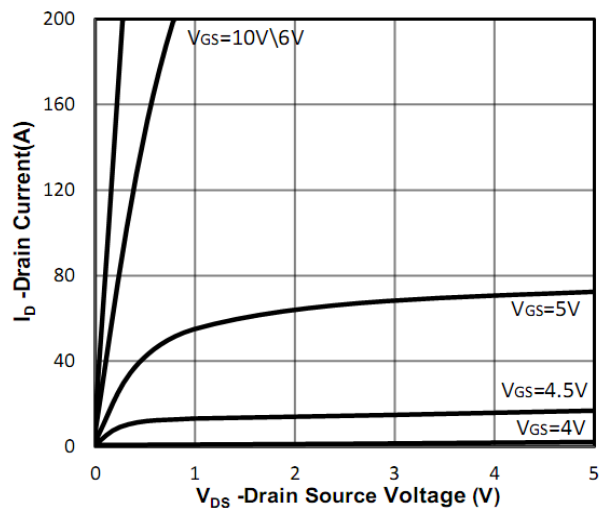
Figure2: $R_{DS(on)}$ -Drain CurrentFigure3: $R_{DS(on)}$ -Junction Temperature

Figure4: Output Characteristics

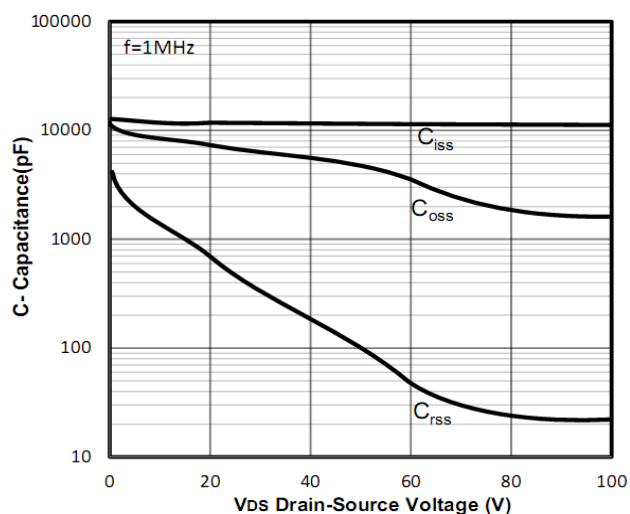
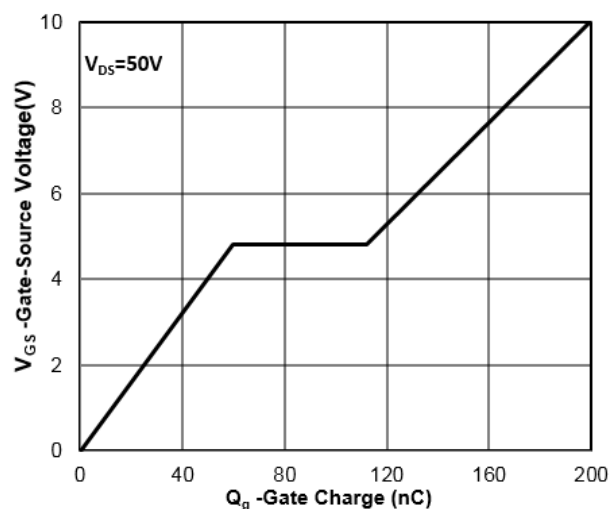
Figure5: Capacitance - V_{DS} 

Figure6: Gate Charge



100V/371A N-Channel Power MOSFET

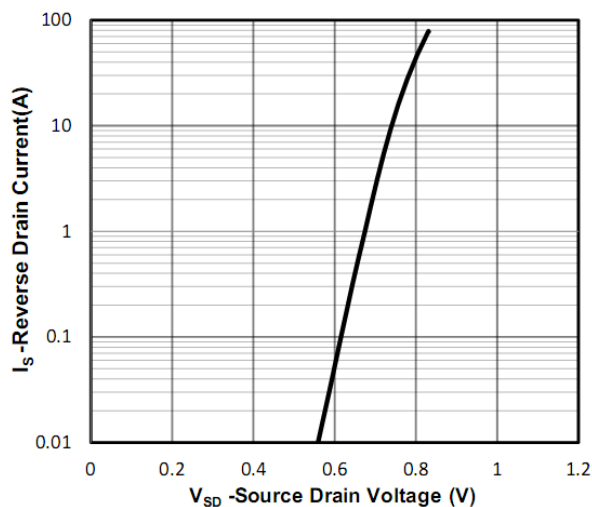


Figure7: Source-Drain Diode Forward

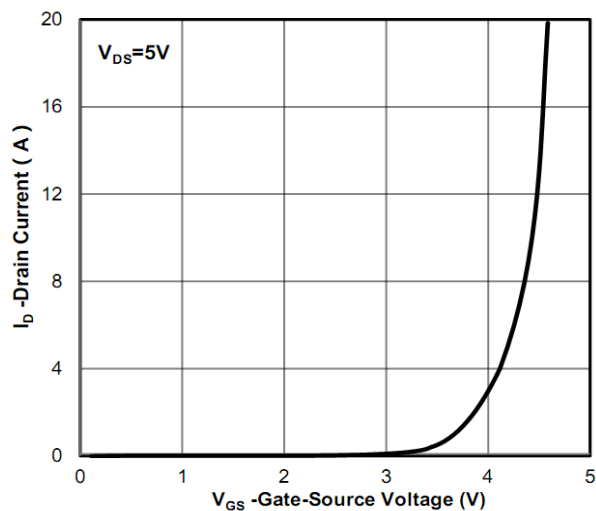


Figure8: Transfer Characteristics

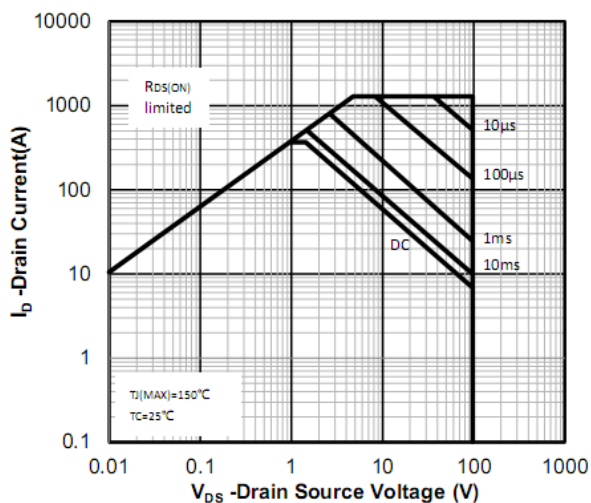


Figure9: Safe Operation Area

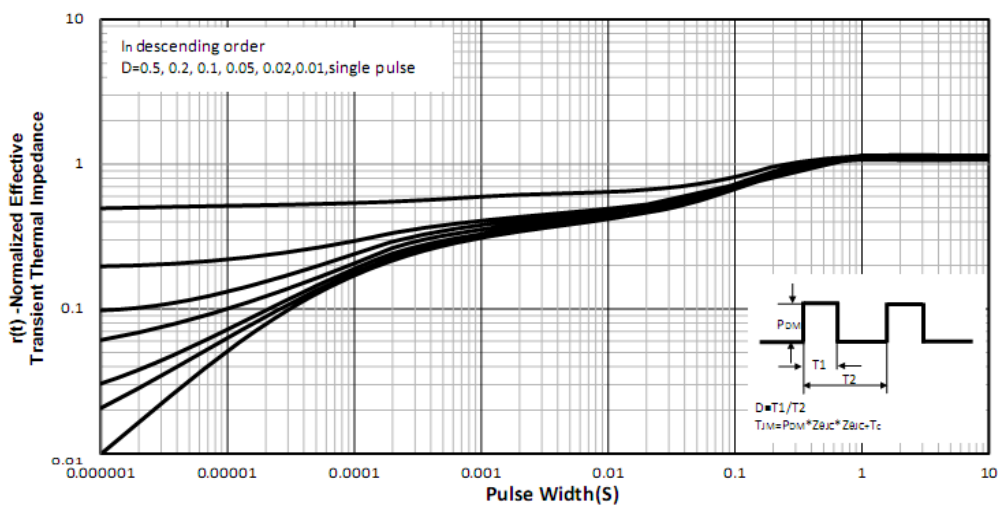


Figure10: Normalized Maximum Transient Thermal Impedance



100V/371A N-Channel Power MOSFET

Test Circuit and Waveform:

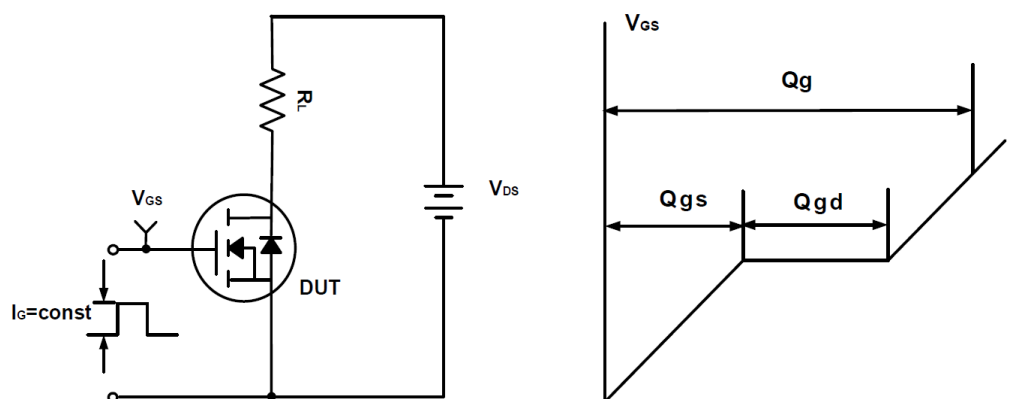


Figure A Gate Charge Test Circuit & Waveforms

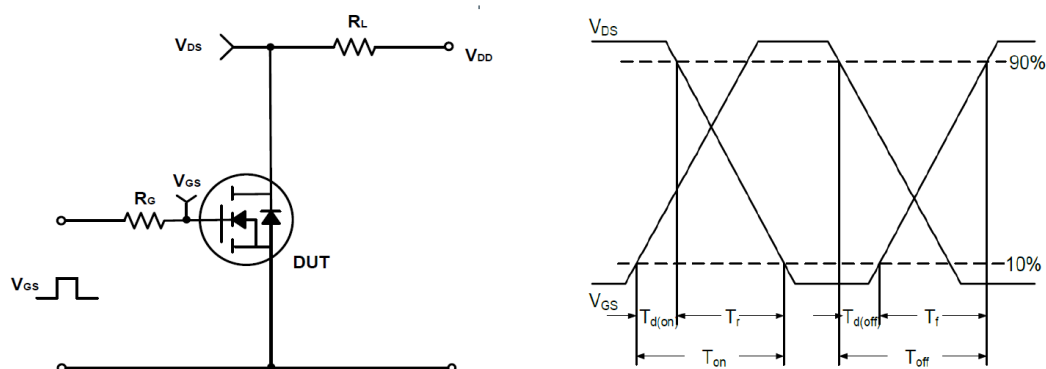


Figure B Switching Test Circuit & Waveforms

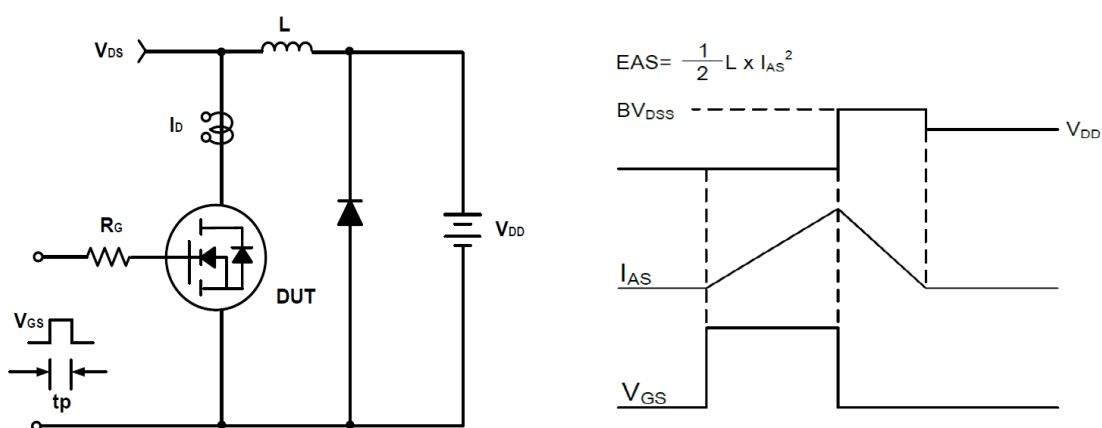
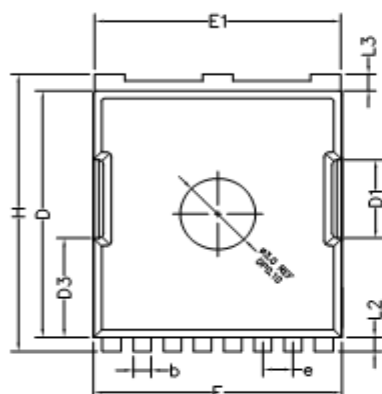


Figure C Unclamped Inductive Switching Circuit & Waveforms

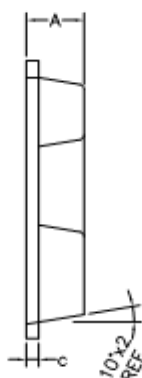


100V/371A N-Channel Power MOSFET

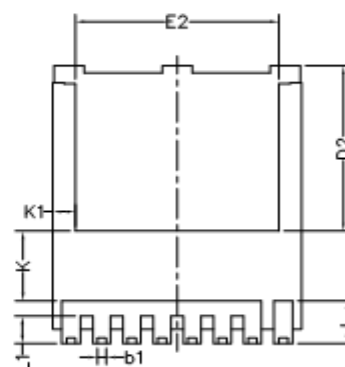
TOLL Package Outline Dimensions (Units: mm)



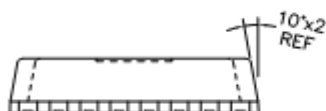
TOP VIEW



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		