Description

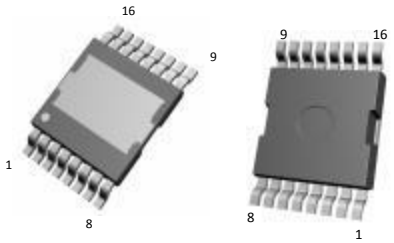
Features

. 110V,390A
. RDS(ON)=1.2mΩ (Typ.) @ VGS =10V
. Advanced SGT Technology
. Provide Excellent RDS(ON) and Low Gate Charge
. 100% UIS Tested

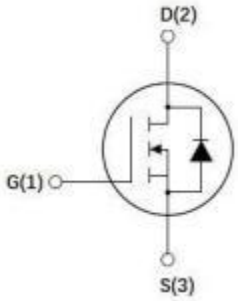
Application

. Power magament
. Elevator
. BMS
. Power tools

Package



TOLT-16



Package Marking and Ordering Information

Product ID	PACK	Qty（pcs）
RST015N11TTL	TOLT-16	2000

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Value	Units
VDSS	Drain-Source Voltage		110	V
VGSS	Gate-Source Voltage		±20	V
ID	Continuous Drain Current	TC = 25℃	390	A
		TC = 100℃	244	A
IDM	Pulsed Drain Current note1		1560	A
EAS	Single Pulsed Avalanche Energy note2		3060	mJ
PD	Power Dissipation	TC = 25℃	431	W
Derating factor			3.1	℃/W
TJ, TSTG	Operating and Storage Temperature Range		-55 to 150	℃

Thermal resistance ratings

Parameter		Symbl	Max.	Unit
Thermal resistance, junction-to-case	Steady state	RθJC	0.29	°C/W

Electrical Characteristics (Tc=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Static parameter						
Drain to source breakdown voltage	V(BR)DSS	VGS = 0 V, ID = 1 mA	110			V
Gate-source threshold voltage	VGS(th)	VDS = VGS, ID = 250 μA	2.5	3.3	4.1	V
Gate-body leakage	IGSS	VDS = 0 V, VGS = ±20 V			±100	nA
Zero gate voltage drain current	IDSS	VDS = 105 V, VGS = 0 V			1	μA
Drain-source on-resistance	RDS(on)	VGS = 10 V, ID = 50 A		1.2	1.5	mΩ
Forward transconductance(5)	gfs	VDS = 5 V, ID = 100 A		300		S
Gate resistance	Rg	f= 1 MHz		1		Ω
Dynamic(5)						
Total gate charge	Qg	VDS = 50 V, ID = 100 A, VGS = 10 V		216		nC
Gate-source charge	Qgs			67		
Gate-drain charge	Qgd			69		
Turn-on delay time	td(on)	VDS = 50 V, ID = 100 A, VGS = 10 V,RGEN = 6 Ω		123		ns
Rise time	tr			189		
Turn-off delay time	td(off)			91		
Fall time	tf			106		
Input capacitance	Ciss	VDS = 50 V, VGS = 0 V, f= 1 MHz		12700		pF
Output capacitance	Coss			3200		
Reverse transfer capacitance	Crss			135		
Reverse Diode Characteristics(5)						
Diode forward voltage	VSD	VGS = 0 V, IF = 100 A		0.85	1.1	V
Reverse recovery time	trr	VDS = 50 V, IF = 100 A, di/dt = 100 A/μs		100		ns
Reverse recovery charge	Qrr			275		nC

Notes

1.Package limited.

2.Pulse width limited by maximum junction temperature.

3. V_{DS} = 75 V, V_{GS} = 10 V, L = 0.5 mH.

4.$R_{\theta JA}$ is determined with the device mounted on a 1 in^2 pad 2 oz copper pad on a 1.5x1.5 in. board of FR-4 material.

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

Typical Performance Characteristics

Fig.1 Typ. transfer characteristics

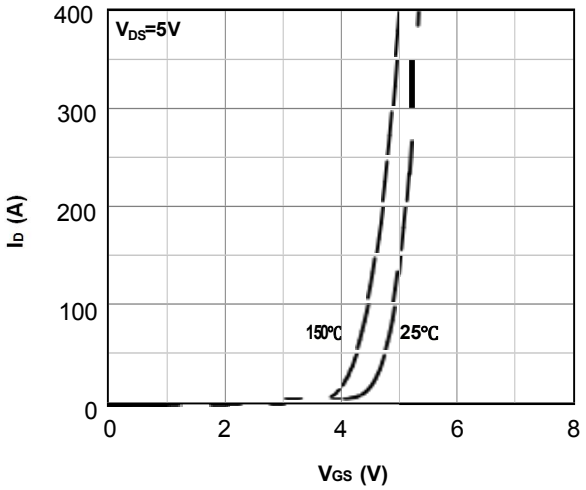


Fig.2 Typ. output characteristics

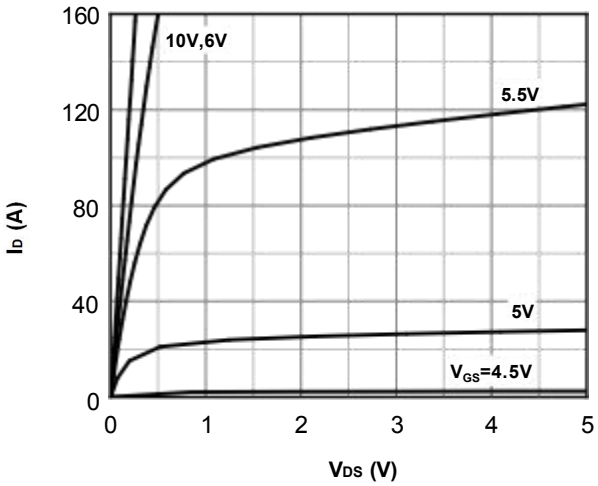


Fig.3 Normalized on-resistance vs drain current

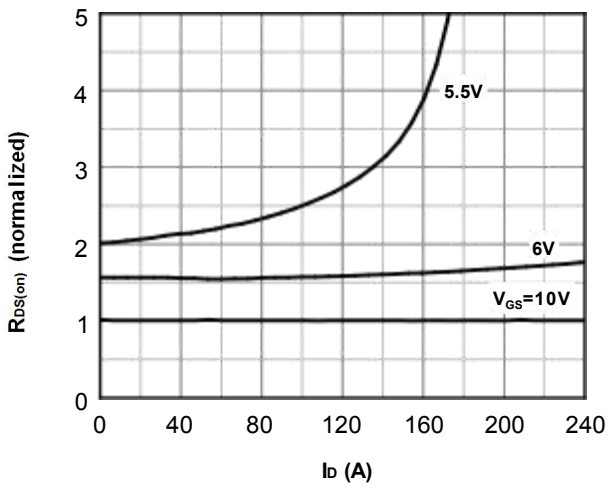


Fig.4 Typ. on-resistance vs gate-source voltage

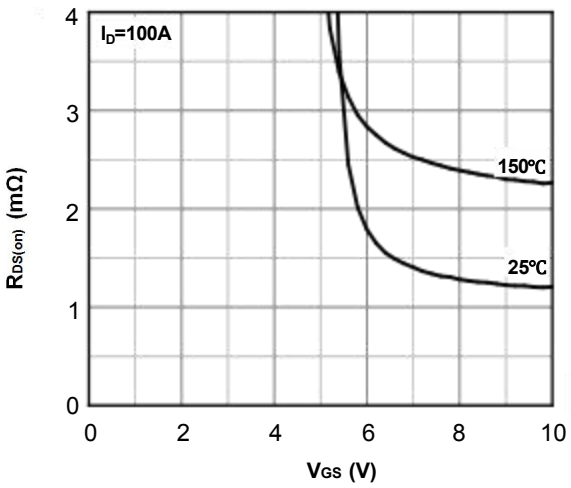


Fig.5 Normalized on-resistance vs junction temperature

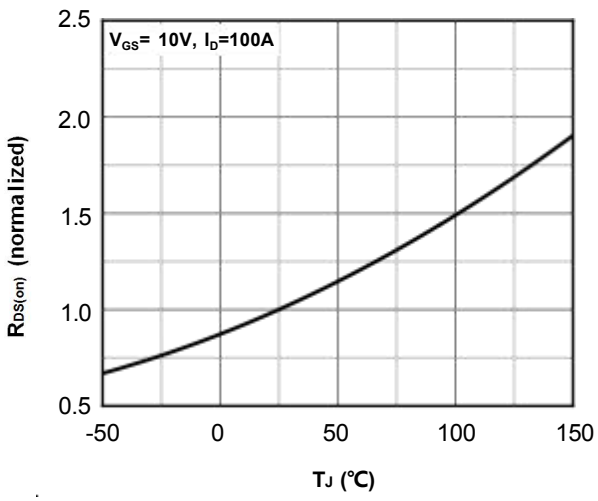


Fig.6 Typ. gate charge

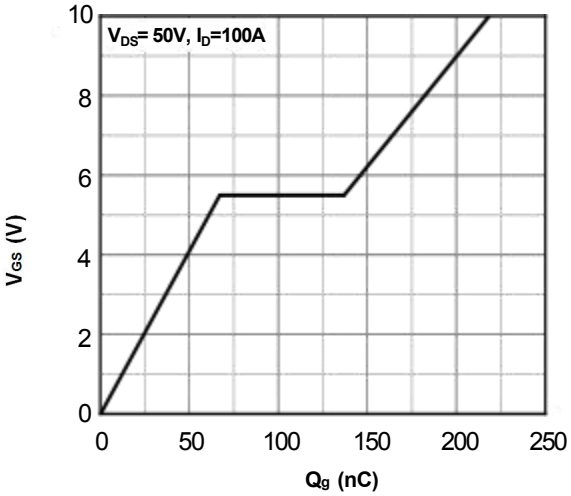


Fig.7 Typ. forward characteristics of body diode

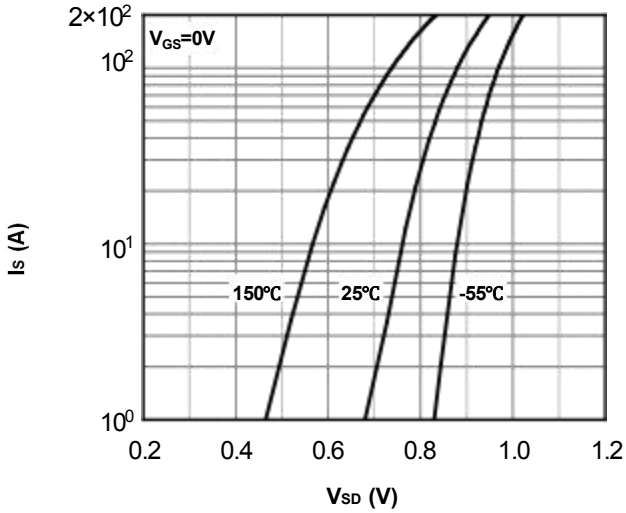


Fig.8 Safe operating area

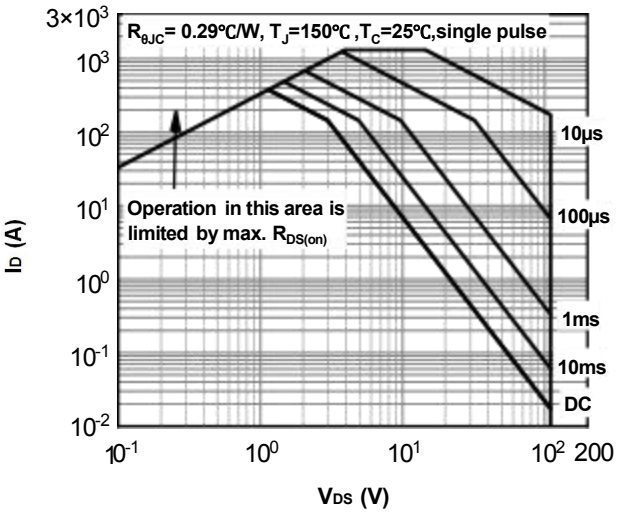


Fig.9 Typ. Capacitance

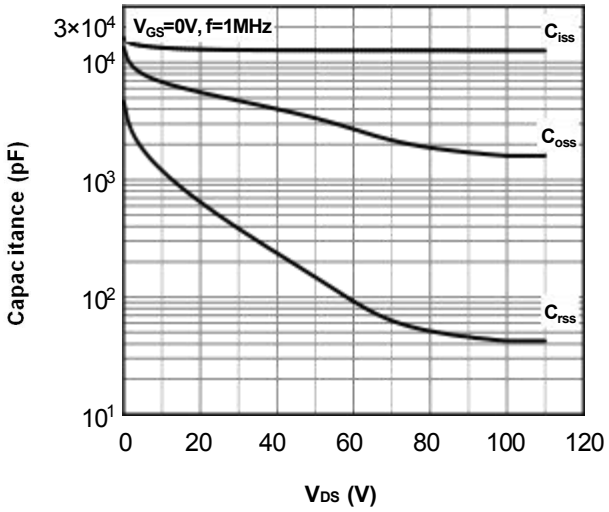


Fig.10 Single pulse maximum power dissipation

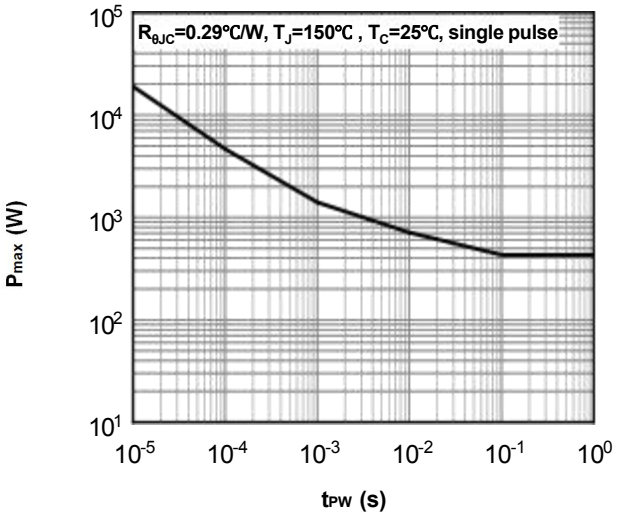


Fig.11 Max. power dissipation vs case temperature

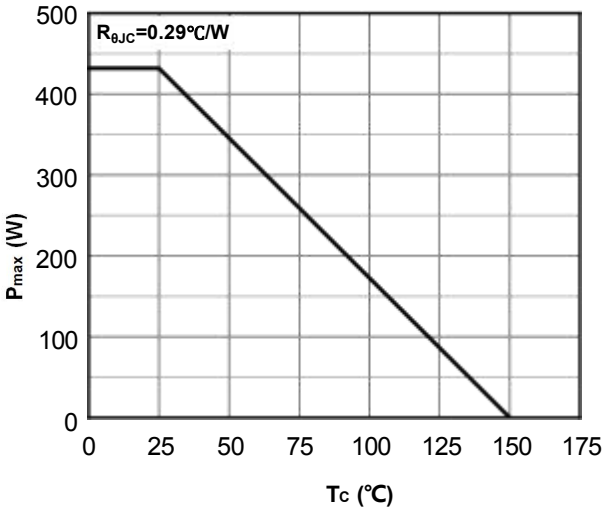


Fig.12 Max. continuous drain current vs case temperature

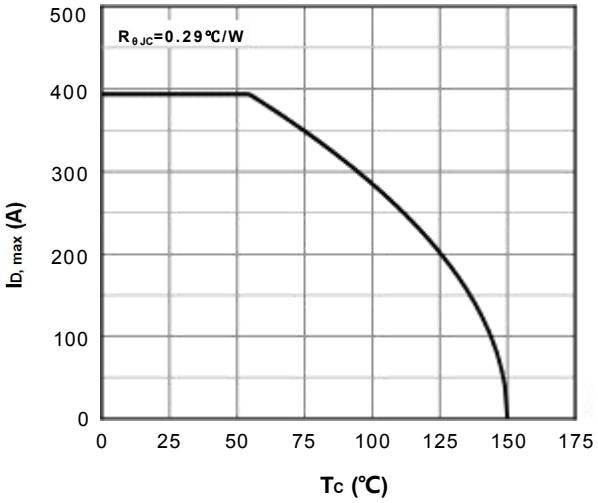


Fig.13 Normalized $V_{(BR)DSS}$ vs junction temperature

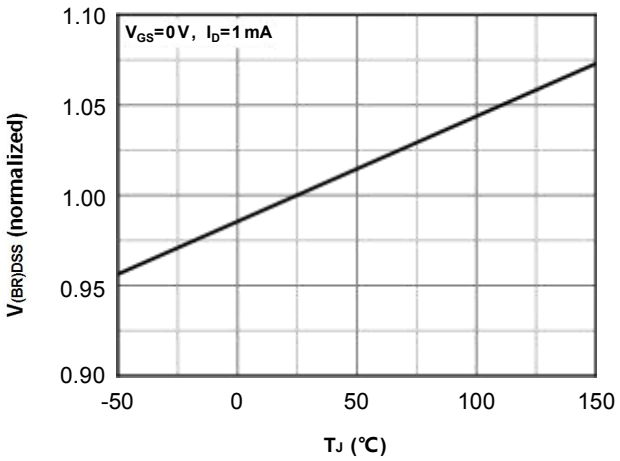


Fig.14 Normalized $V_{GS(th)}$ vs junction temperature

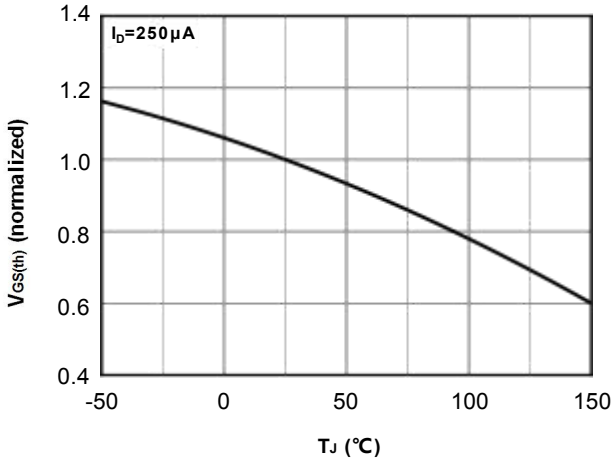
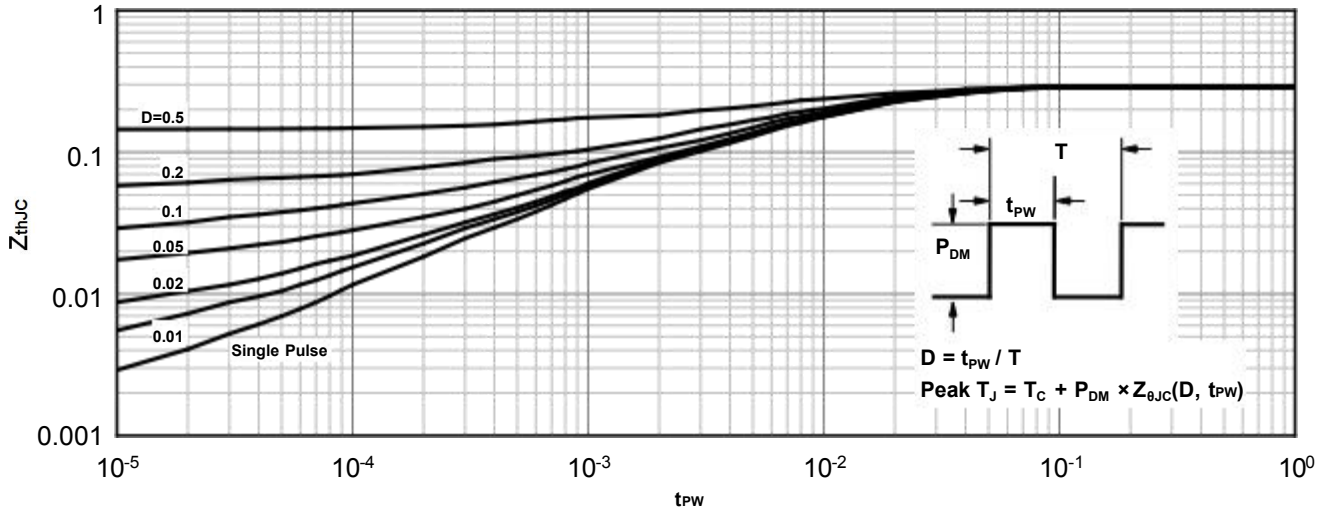
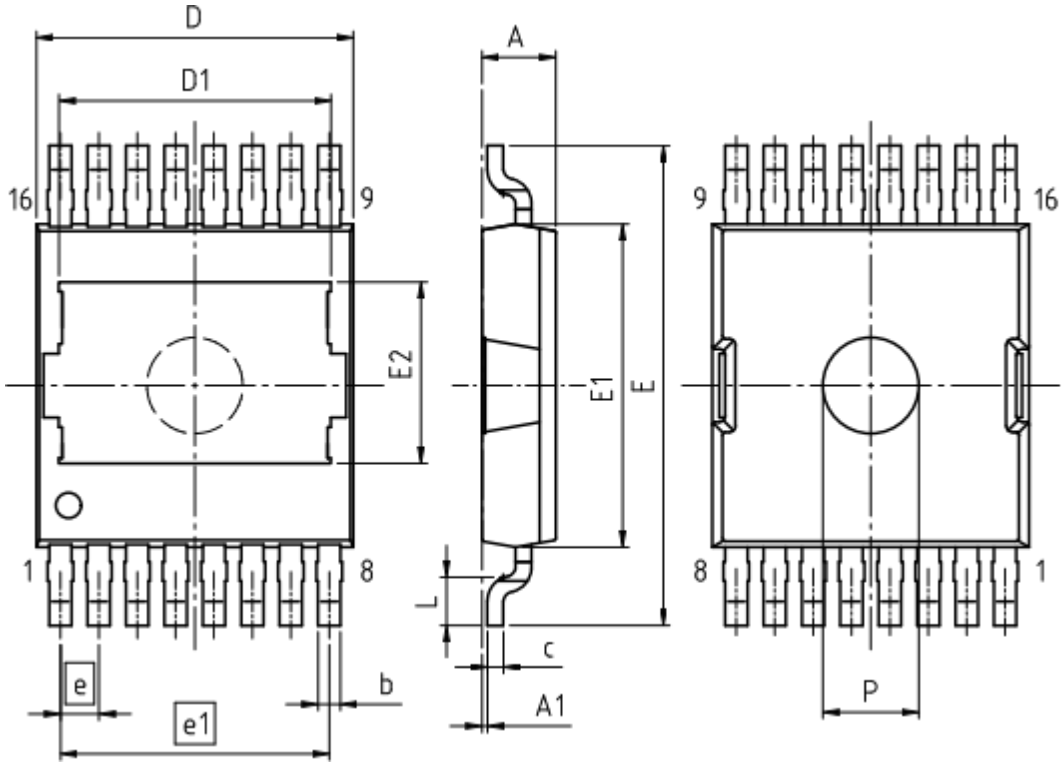


Fig.15 Transient thermal impedance from junction to case



TOLT-16 Package Information



PACKAGE - GROUP NUMBER:	PG-HDSOP-16-U01	
REVISION: 01	DATE: 18.12.2020	
DIMENSIONS	**MILLIMETERS**	
	MIN.	MAX.
A	2.25	2.35
A1	0.01	0.16
b	0.60	0.80
c	0.40	0.60
D	9.70	10.10
D1	8.20	8.40
E	14.80	15.20
E1	10.00	10.30
E2	5.57	5.77
e	1.20	
e1	8.40	
L	1.40	1.60
P	2.90	3.10