

描述 / Descriptions

TOLT-16L 封装 N 沟道场效应管。

N-Channel MOSFET in a TOLT-16L Plastic Package.

特征 / Features

$V_{DS}(V)=100V$ $I_D=300A$

$R_{DS(ON)}@10V \leq 1.25m\Omega$ (Typ. 1.1 m Ω)

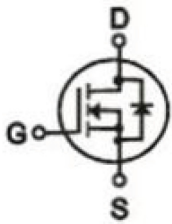
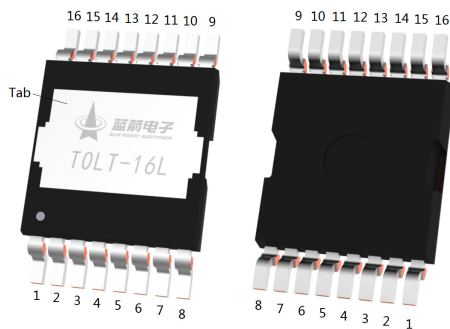
$R_{DS(ON)}@6V \leq 1.85m\Omega$ (Typ. 1.55m Ω)

无卤产品。 HF Product.

用途 / Applications

BMS, 无人机, 大功率逆变系统, 轻型电动车。

BMS, Drones, High power inverter system, Light electric vehicles.

内部等效电路 / Equivalent Circuit**引脚排列 / Pinning**

PIN1、2、3、4、5、6、7: S

PIN8: G

PIN9、10、11、12、13、14、15、16、Tab: D

印章代码 / Marking

见印章说明。

See Marking Instructions.

极限参数 / Absolute Maximum Ratings($T_A=25^{\circ}\text{C}$)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	V_{DS}	100	V
Drain Current(DC)	$I_D(T_C=25^{\circ}\text{C})$	300	A
	$I_D(T_C=100^{\circ}\text{C})$	258	A
Drain Current – Pulsed ^{*,**}	I_{DM}	1200	A
Gate-Source Voltage	V_{GS}	± 20	V
Power Dissipation	P_{tot}	375	W
Continuous-Source Current	I_S	300	A
Single Pulse Avalanche Energy($V_{DD}=50\text{V}, L=1.0\text{mH}$)	E_{AS}	2450	mJ
Junction and Storage Temperature Range	T_j, T_{stg}	-55 to 175	$^{\circ}\text{C}$
Thermal resistance, junction – ambient ^{**}	$R_{\theta JA}$	52	$^{\circ}\text{C}/\text{W}$
Thermal resistance, junction – case ^{**}	$R_{\theta JC}$	0.4	

Notes:

* : Pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2 \%$

** : Surface Mounted on minimum footprint pad area

*** : Limited by bonding wire

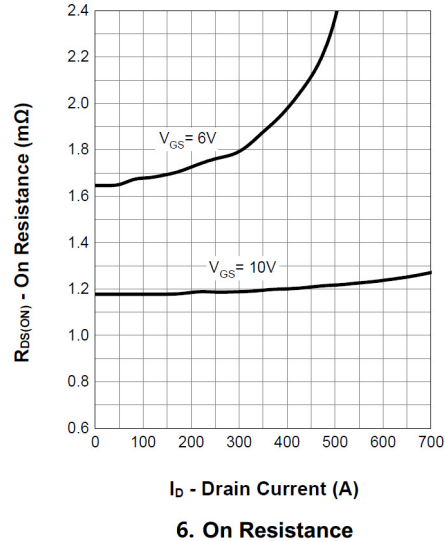
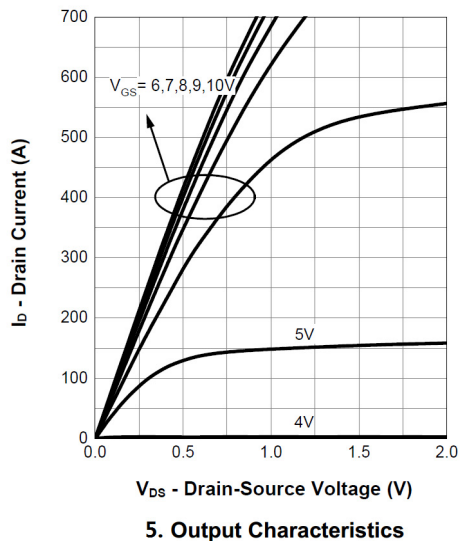
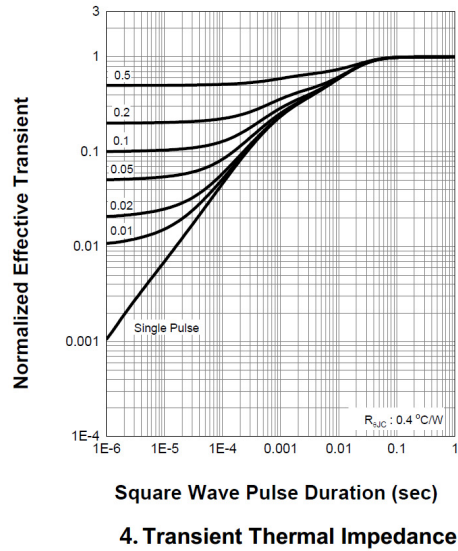
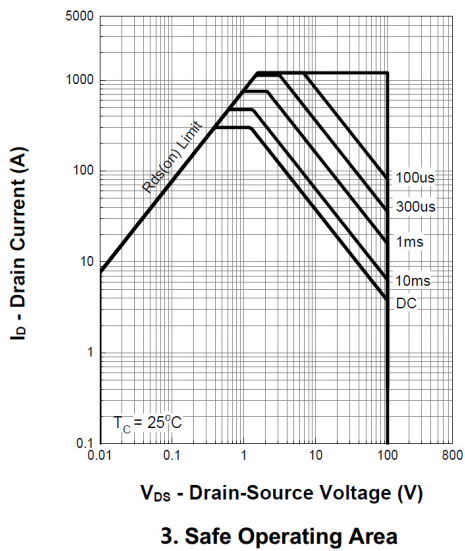
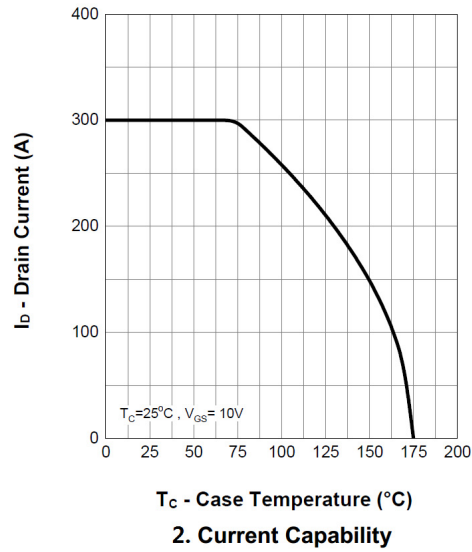
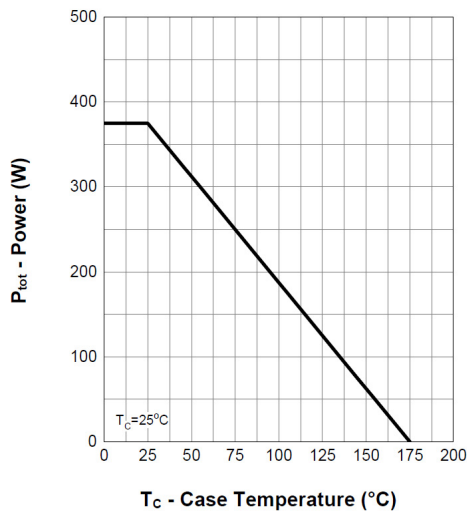
电性能参数 / Electrical Characteristics($T_A=25^{\circ}\text{C}$)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2		4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=50\text{A}$		1.1	1.25	$\text{m}\Omega$
		$V_{GS}=6\text{V}, I_D=30\text{A}$		1.55	1.85	$\text{m}\Omega$
Diode Forward Voltage	V_{SD}	$I_S=50\text{A}, V_{GS}=0\text{V}$			1.3	V
Reverse Recovery Time	t_{rr}	$I_{DS} = 50 \text{ A}, V_{GS} = 0 \text{ V}$ $dI_{SD}/dt = 100 \text{ A}/\mu\text{s}$		89		nS
Reverse Recovery Charge	Q_{rr}			160		nC
Input Capacitance	C_{iss}			13374		pF
Output Capacitance	C_{oss}	$V_{DS}=50\text{V}, V_{GS}=0\text{V}$ $f=1.0\text{MHz}$		2026		
Reverse Transfer Capacitance	C_{rss}			118		

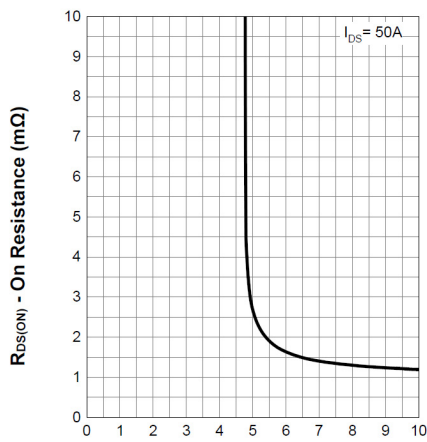
电性能参数 / Electrical Characteristics($T_A=25^{\circ}\text{C}$)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=50V$ $I_{DS}=50A$		222		nC
Gate Source Charge	Q_{gs}			75		
Gate Drain Charge	Q_{gd}			49		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V V_{DS}=50V$ $R_G=3.9\ \Omega R_L=1\ \Omega$ $I_D=50A$		41		ns
Turn-On Rise Time	t_r			116		
Turn-Off Delay Time	$t_{d(off)}$			137		
Turn-Off Fall Time	t_f			80		

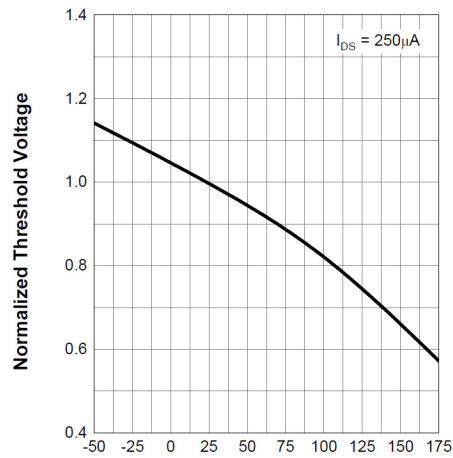
电参数曲线图 / Electrical Characteristic Curve



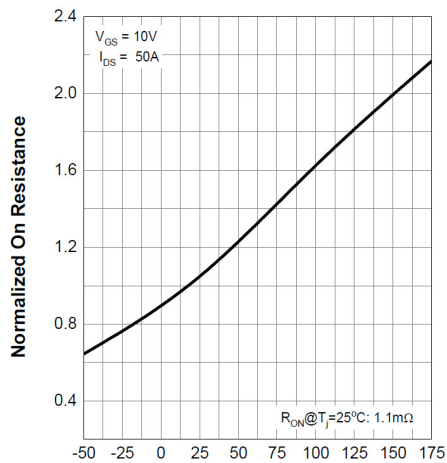
电参数曲线图 / Electrical Characteristic Curve

 V_{GS} - Gate-Source Voltage (V)

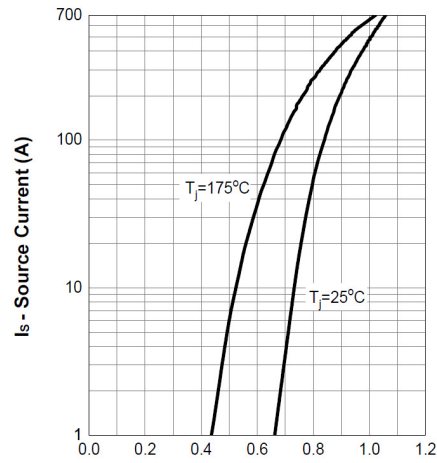
7. Transfer Characteristics

 T_J - Junction Temperature ($^{\circ}C$)

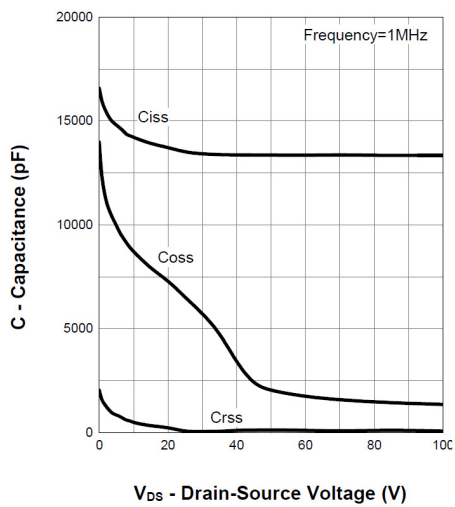
8. Normalized Threshold Voltage

 T_J - Junction Temperature ($^{\circ}C$)

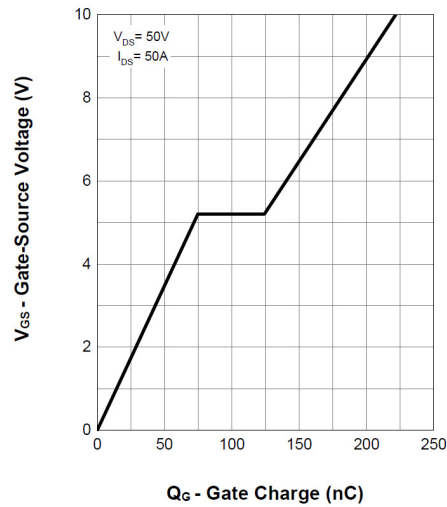
9. Normalized On Resistance

 V_{SD} - Source-Drain Voltage (V)

10. Diode Forward Current

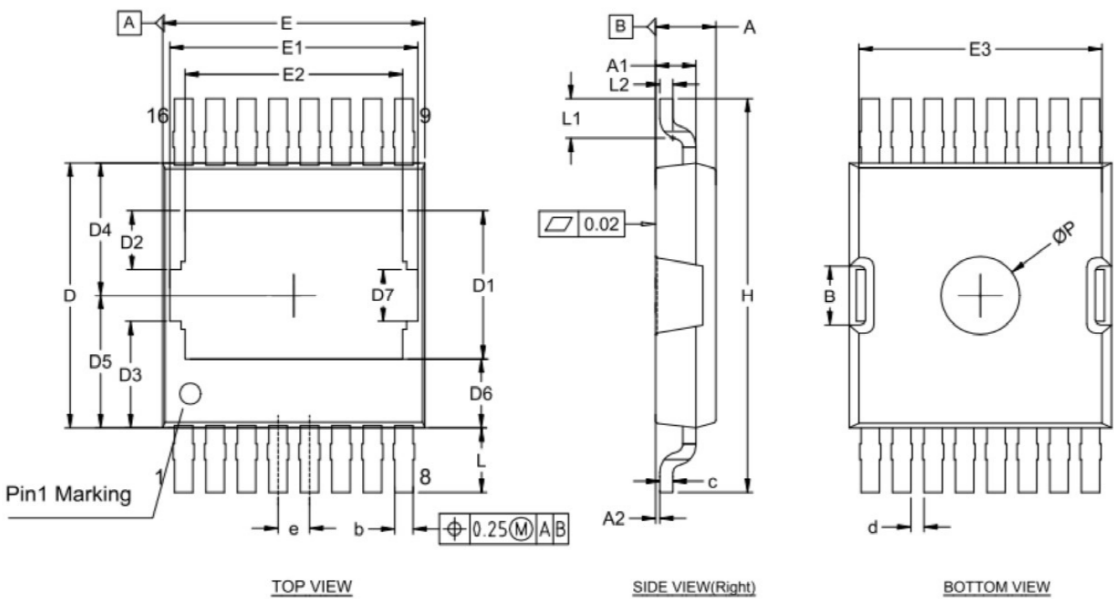
 V_{DS} - Drain-Source Voltage (V)

11. Capacitance

 Q_G - Gate Charge (nC)

12. Gate Charge

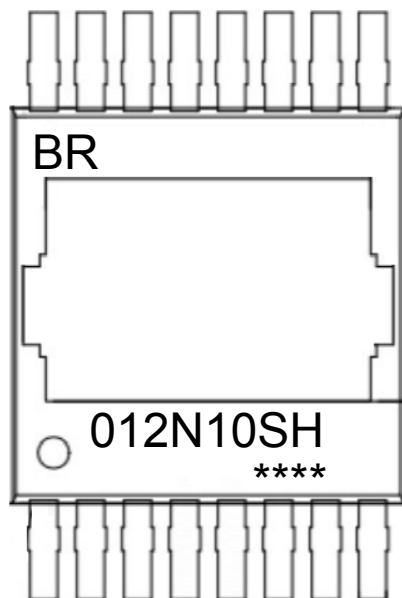
外形尺寸图 / Package Dimensions



Symbol	Dimensions In Millimeters			Symbol	Dimensions In Millimeters		
	MIN.	NOM.	MAX.		MIN.	NOM.	MAX.
A	2.250	2.300	2.350	E	9.700	10.000	10.100
A1	1.440	1.540	1.640	E1	9.460 REF.		
A2	0.010	-	0.160	E2	8.100	8.300	8.500
B	0.600	0.700	0.800	E3	9.070	9.270	9.470
C	0.400	0.500	0.600	H	14.800	15.000	15.200
D	0.400	0.500	0.600	L	2.250	2.450	2.650
E	1.200 BSC			L1	1.350	1.500	1.650
D	10.000	10.100	10.300	L2	0.500 BSC		
D1	5.470	5.670	5.870	øp	2.900	3.000	3.100
D2	2.040	2.240	2.440	B	0.812	2.280	1.212
D3	4.050 REF.			θ	1°	3°	5°
D4	5.050 REF.			θ1	6°	7°	8°
D5	5.050 REF.						
D6	2.620 REF.						
D7	2.000 REF.						



印章说明 / Marking Instructions



说明：

BR： 为公司代码

012N10SH： 为型号代码

****： 为生产批号代码，随生产批号变化

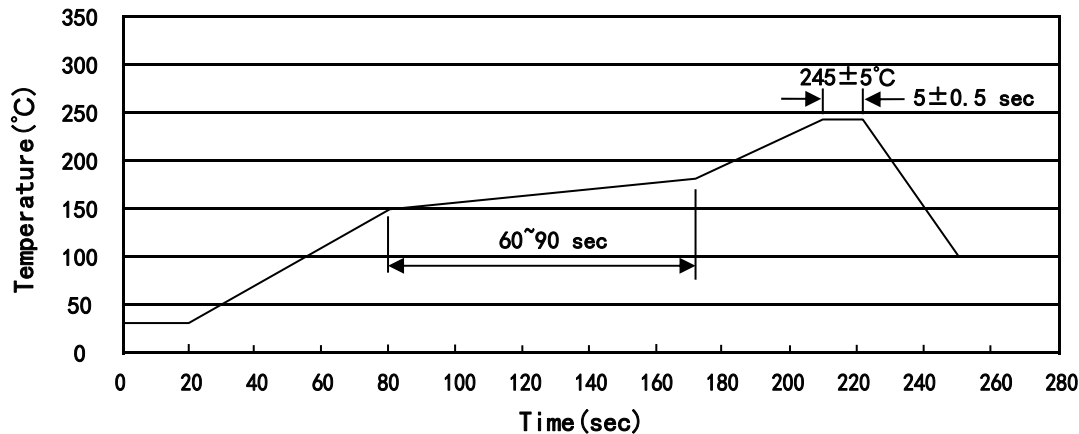
Note：

BR： Company Code

012N10SH： Product Type Code

****： Lot No. Code, code change with Lot No.

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)



说明：

- 1、预热温度 150~180°C，时间 60~90sec;
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec;
- 3、焊接制程冷却速度为 2~10°C/sec.

Note:

- 1.Preheating:150~180°C, Time:60~90sec.
- 2.Peak Temp.:245±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
TOLT-16L	2,000	1	2,000	TBD	TBD	TBD	TBD	TBD

使用说明 / Notices

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