

BSLT10NH017SP1

N-Channel Power MOSFET

100 V, 300 A, 1.7 mΩ

Description

This N-Channel MOSFET has been designed specifically to improve the overall efficiency. It has been optimized for low gate charge, low $R_{DS(on)}$, fast switching speed.

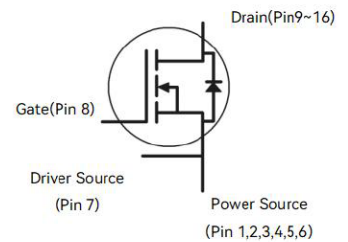
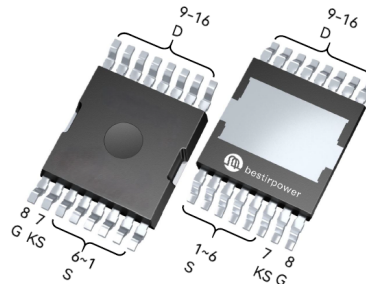
Features

BV_{DSS}	I_D	$R_{DS(on),max}$	$Q_{rr,typ}$
100 V	300 A	1.7 mΩ	323 nC

- $V_{DS}=100V, I_D=300A$
- $R_{DS(on)} < 1.7m\Omega$
@ $V_{GS}=10V$ (Type: 1.4mΩ)

Applications

- DC/DC Converter
- LED Backlighting
- Power Management Switches



Absolute Maximum Ratings ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter		Value	Unit
V_{DSS}	Drain to Source Voltage		100	V
V_{GSS}	Gate to Source Voltage		± 20	V
I_D	Continuous Drain Current, ($T_C = 25^\circ\text{C}$)		300	A
	Continuous Drain Current, ($T_C = 100^\circ\text{C}$)		210	
I_{DM}	Drain Current (2)	Pulsed	960	A
E_{AS}	Single Pulsed Avalanche Energy		2340	mJ
P_D	Power Dissipation	($T_C = 25^\circ\text{C}$)	313	W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.15	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	40	

Electrical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
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Off Characteristics

BV_{DSS}	Drain to Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	100	107	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 100\text{ V}, V_{GS} = 0\text{ V}, T_J = 25^\circ\text{C}$	-	-	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20\text{ V}$	-	-	± 100	nA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 250\text{ }\mu\text{A}$	2.0	3.0	4.0	V
$R_{DS(on)}$	Static Drain to Source On Resistance	$V_{GS} = 10\text{ V}, I_D = 50\text{ A}$	-	1.4	1.7	mΩ

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 50\text{ V},$ $f = 1.0\text{ MHz}$	-	11300	-	pF
C_{oss}	Output Capacitance		-	5600	-	pF
C_{rss}	Reverse transfer capacitance		-	1048	-	pF
$Q_{g(tot)}$	Total Gate Charge at 10 V	$V_{GS} = 10\text{ V}, V_{DD} = 50\text{ V}$ $I_D = 20\text{ A}$	-	165	-	nC
Q_{gs}	Gate to Source Charge		-	67	-	nC
Q_{gd}	Gate to Drain "Miller" Charge		-	35	-	nC
R_G	Gate Resistance	$f = 1\text{ MHz}$	-	2	-	Ω

Switching Characteristics

$t_{d(on)}$	Turn-On Delay Time	$V_{GS} = 10\text{ V}, V_{DD} = 50\text{ V}$ $R_G = 3\text{ }\Omega, I_D = 20\text{ A}$	-	37	-	ns
t_r	Turn-On Rise Time		-	112	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	85	-	ns
t_f	Turn-Off Fall Time		-	115	-	ns

Source-Drain Diode Characteristics

I_S	Continuous Diode Forward Current		-	300	-	A
V_{SD}	Diode Forward Voltage	$T_J = 25^\circ\text{C}, I_S = 30\text{ A}, V_{GS} = 0\text{ V}$	-	0.83	1.4	V
t_{rr}	Reverse Recovery Time	$I_F = 30\text{ A}, diF/dt = 100\text{ A/us}$	-	100	-	ns
Q_{rr}	Reverse Recovery Charge		-	323	-	nC

Typical Performance Characteristics

Figure 1: Output Characteristics

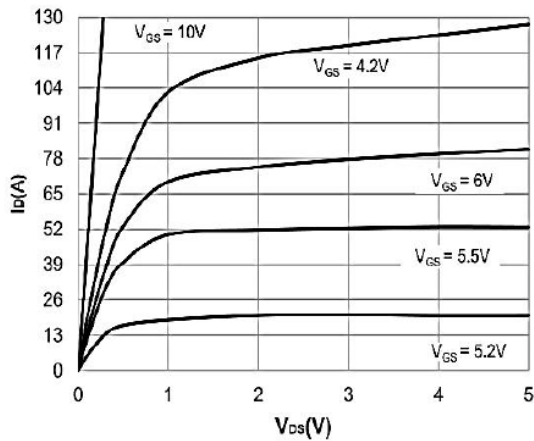


Figure 2: Transfer Characteristics

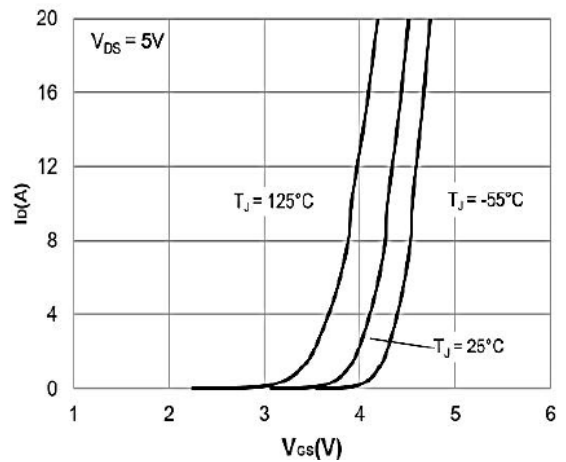


Figure 3: $R_{DS(on)}$ vs Drain Current

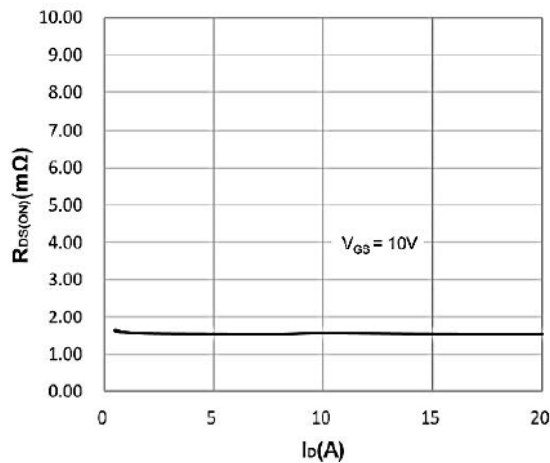


Figure 4: Body Diode Characteristics

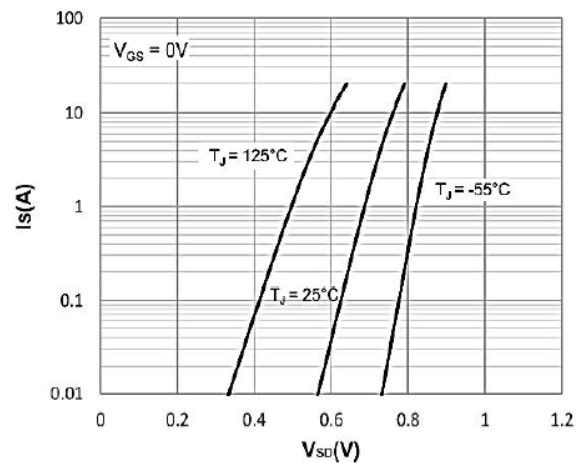


Figure 5: Gate Charge Characteristics

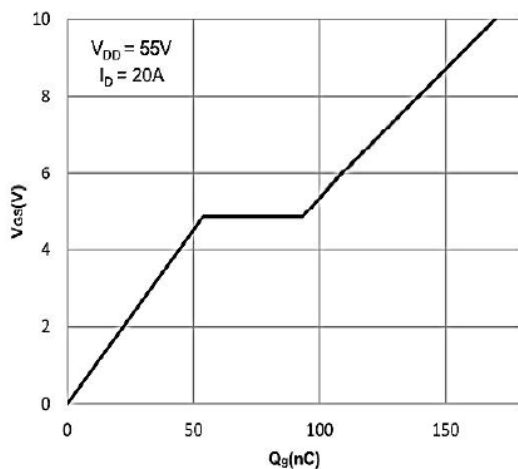
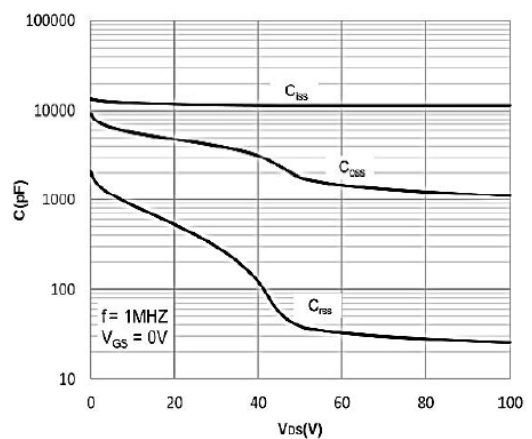


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: BVDSS vs Junction Temperature

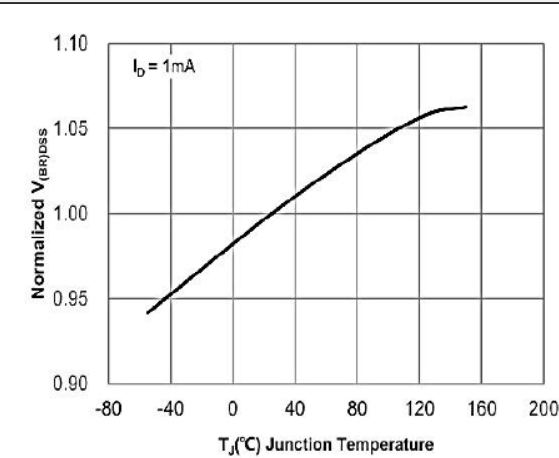


Figure 8: RDS(on) vs Junction Temperature

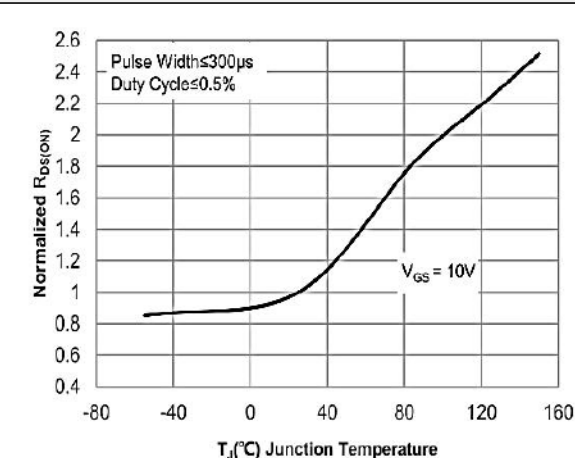


Figure 9: Maximum Safe Operating Area

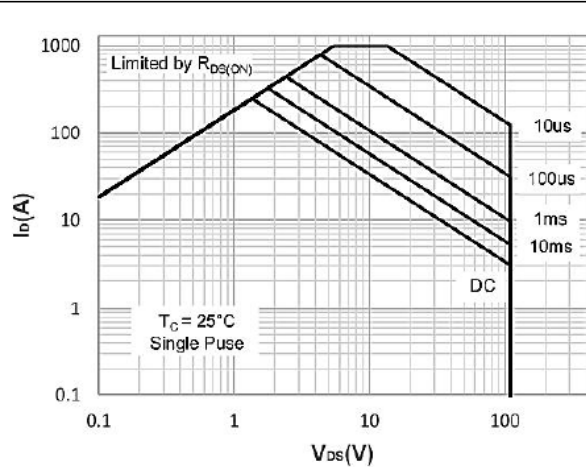


Figure 10: Drain Current vs Case Temperature

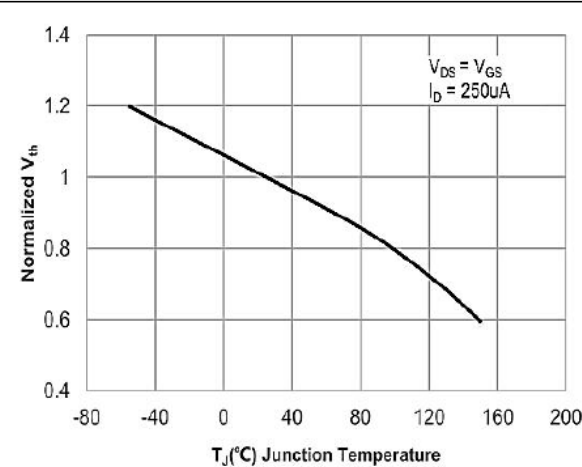
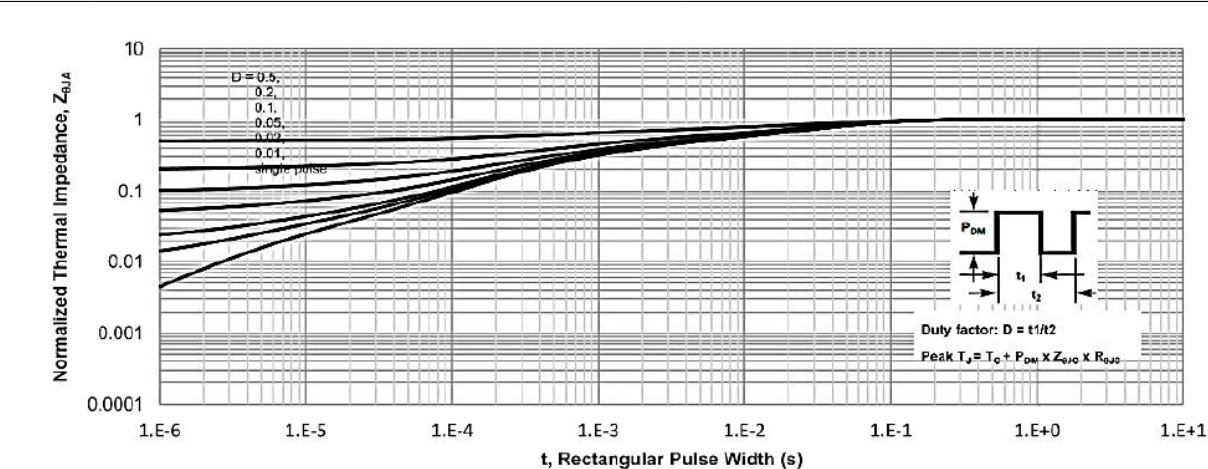
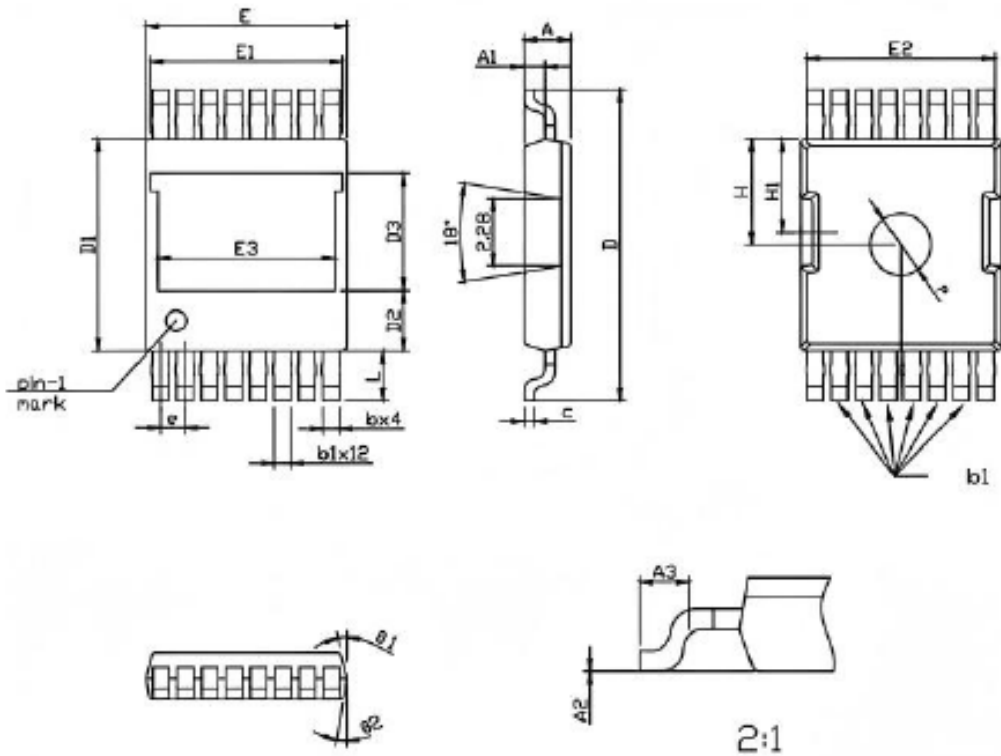


Figure 11: Normalized Maximum Transient Thermal Impedance



TOLT-A-16L



SYMBOL	mm		
	MIN	NOM	MAX
A	2.25	2.30	2.35
A1	1.00	1.04	1.08
A2	0.01	0.08	0.16
A3	1.50REF		
b	0.73	0.75	0.79
b1	0.68	0.70	0.74
c	0.45	0.50	0.55
D	14.80	15.00	15.20
D1	10.00	10.10	10.30
D2	3.60	3.80	4.00
D3	5.77REF		
E	9.70	9.90	10.10
E1	9.46REF		

* Dimensions in millimeters

Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
BSLT10NH017SP1	BSLT10NH017SP1	TOLT-A-16L	Tape & Reel	1800 units

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