

N-Channel 100 V (D-S) Super Junction MOSFET

PRODUCT SUMMARY

V _{DS} (V)	R _{DS(on)} (mΩ)(Typ.)	I _D (A) ^a	Q _g (Typ.)
100	3.3 at V _{GS} = 10 V	200	83 nC

FEATURES

- DT-SJ Power MOSFET
- Very low on-resistance
- Excellent gate charge x R_{DS(on)} product(FOM)

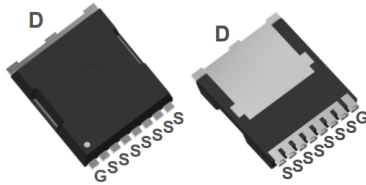


RoHS
COMPLIANT

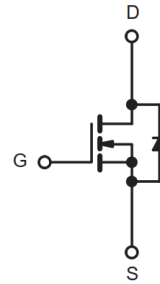
APPLICATIONS

- Power Management
- Motor Drivers
- DC-DC Converters

TOLL Pin Configuration



Top View



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	± 20	
Continuous Drain Current (T _J = 150 °C)	I _D	T _C = 25 °C	200
		T _C = 100 °C	124
Pulsed Drain Current ^a	I _{DM}	800	A
Single Pulse Avalanche Energy	L = 0.5 mH E _{AS}	1200	mJ
Maximum Power Dissipation ^b	P _D	T _C = 25 °C	310
		T _C = 100 °C	121
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 150	°C
Soldering Recommendations (Peak Temperature)		260	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	R _{thJA}	-	45	°C/W
Maximum Junction-to-Case (Drain) ^{c,d}	R _{thJC}	-	0.59	

Notes:

- T_C = 25 °C.
- Surface mounted on 1" x 1" FR4 board.
- t = 10 s.
- Maximum under steady state conditions is 0.8 °C/W.

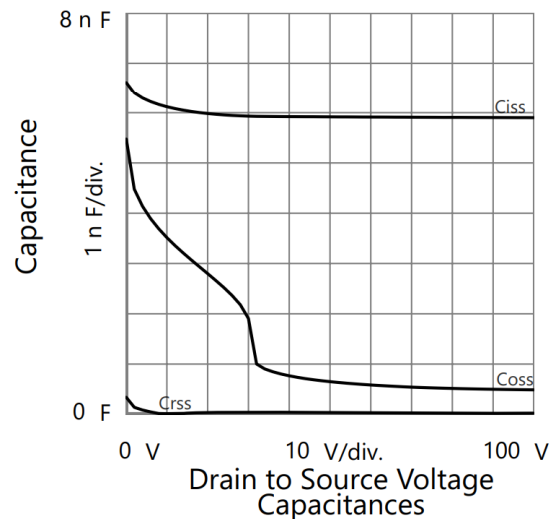
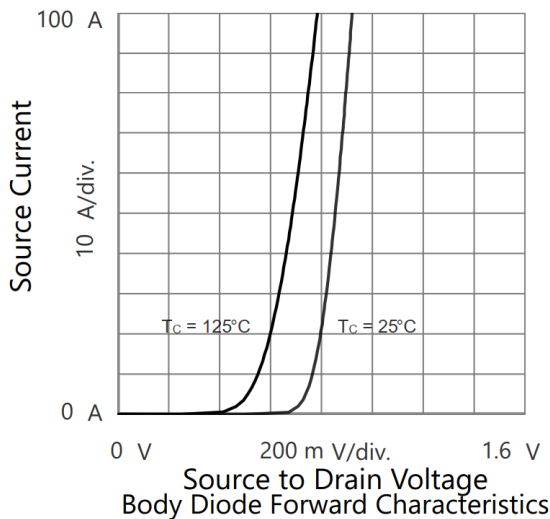
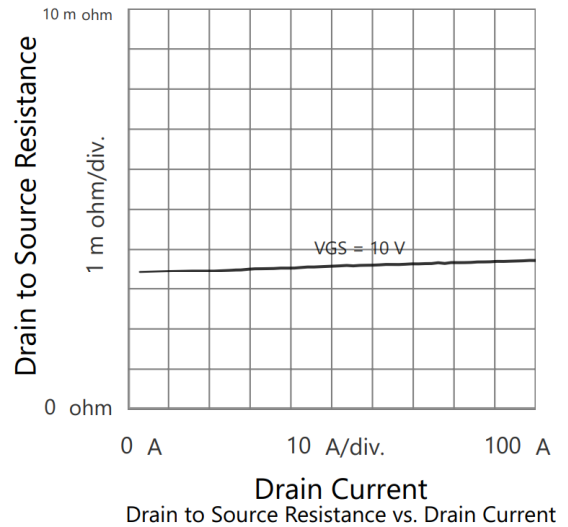
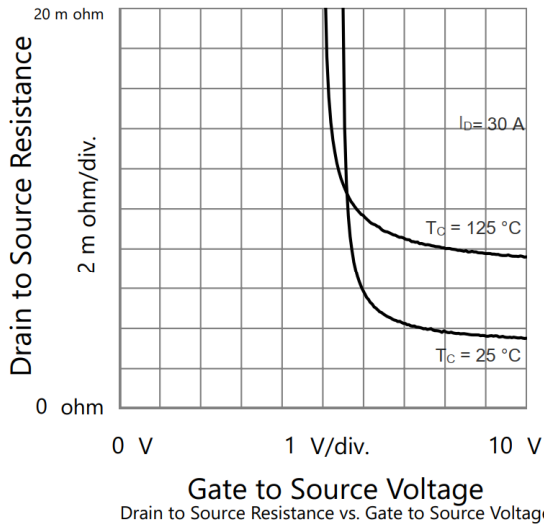
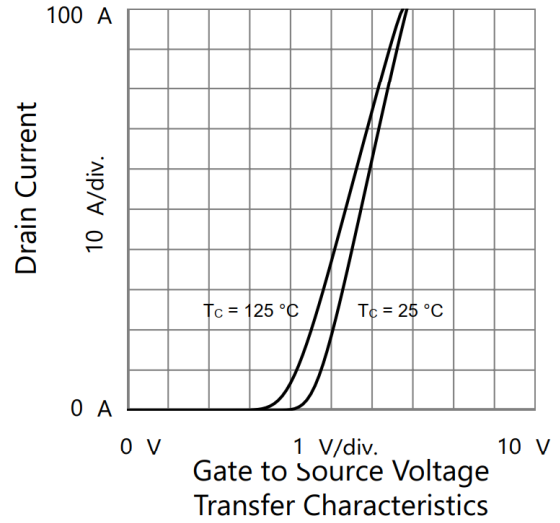
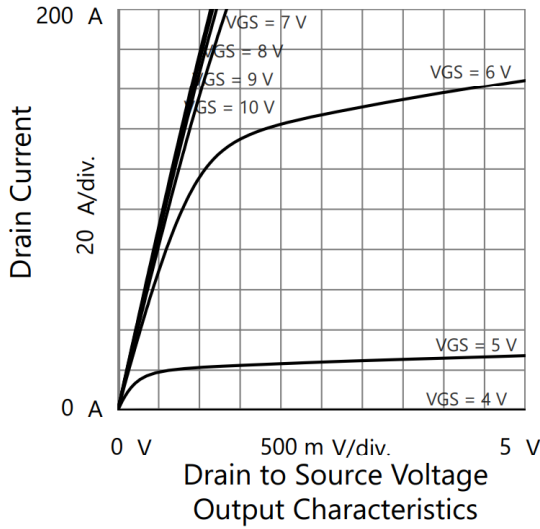
SPECIFICATIONS ($T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2	-	4	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	μA
		$V_{DS} = 80\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$	-	-	10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 10\text{ V}, V_{GS} = 10\text{ V}$	200	-	-	A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 30\text{ A}$	-	3.3	4.0	m Ω
Forward Transconductance ^a	g_{fs}	$V_{DS} = 5\text{ V}, I_D = 30\text{ A}$	-	80	-	S
Dynamic ^b						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 50\text{ V}, f = 1\text{ MHz}$	-	5920	-	μF
Output Capacitance	C_{oss}		-	650	-	
Reverse Transfer Capacitance	C_{rss}		-	12	-	
Total Gate Charge ^c	Q_g	$V_{DS} = 50\text{ V}, V_{GS} = 10\text{ V}, I_D = 30\text{ A}$	-	83	-	nC
Gate-Source Charge ^c	Q_{gs}		-	36	-	
Gate-Drain Charge ^c	Q_{gd}		-	33	-	
Gate Resistance	R_g	$f = 1\text{ MHz}$	-	2.1	-	Ω
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = 50\text{ V}, R_g = 3\text{ }\Omega,$ $V_{GEN} = 10\text{ V}$	-	25	-	ns
Rise Time ^c	t_r		-	63	-	
Turn-Off Delay Time ^c	$t_{d(off)}$		-	50	-	
Fall Time ^c	t_f		-	15	-	
Drain-Source Body Diode Ratings and Characteristics ^b ($T_C = 25\text{ }^\circ\text{C}$)						
Continuous Source Current	I_S	$T_C = 25\text{ }^\circ\text{C}$	-	-	200	A
Pulsed Source Current	I_{SM}		-	-	800	A
Forward Voltage ^a	V_{SD}	$I_F = 30\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.2	V
Reverse Recovery Time	t_{rr}	$I_F = 30\text{ A}, di/dt = 500\text{ A}/\mu\text{s}$	-	60	-	ns
Reverse Recovery Charge	Q_{rr}		-	143	-	nC

Notes

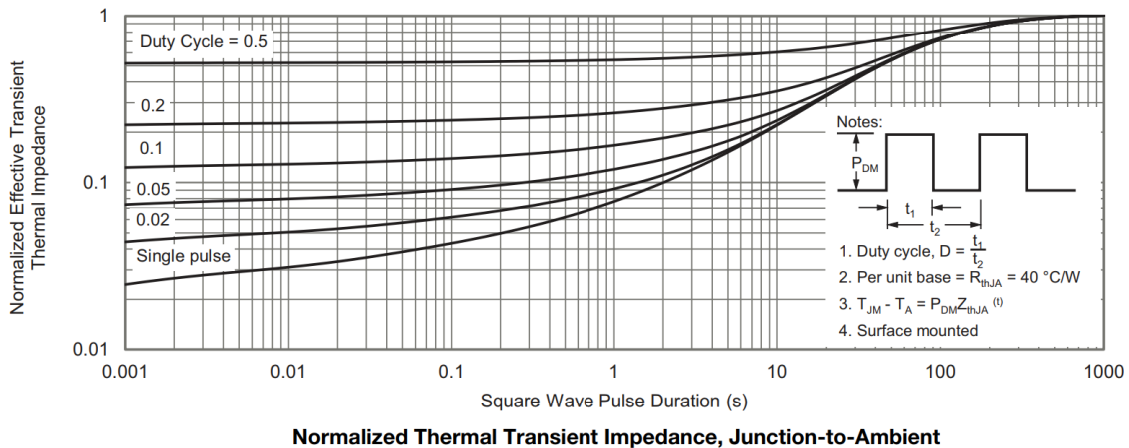
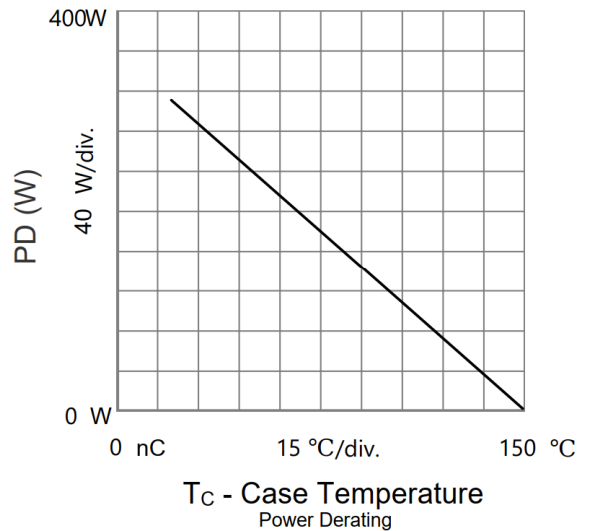
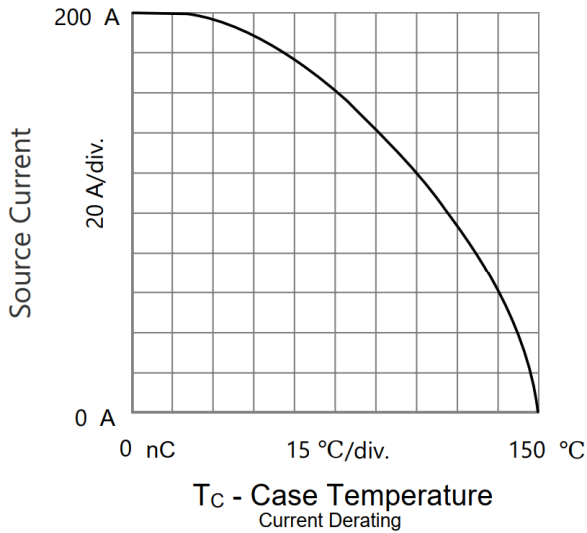
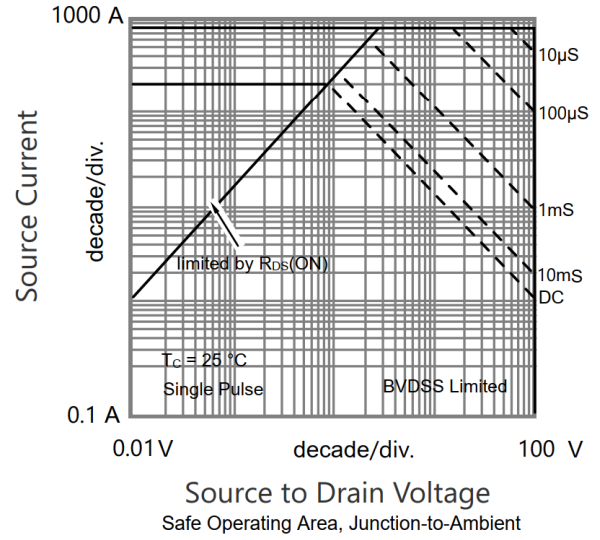
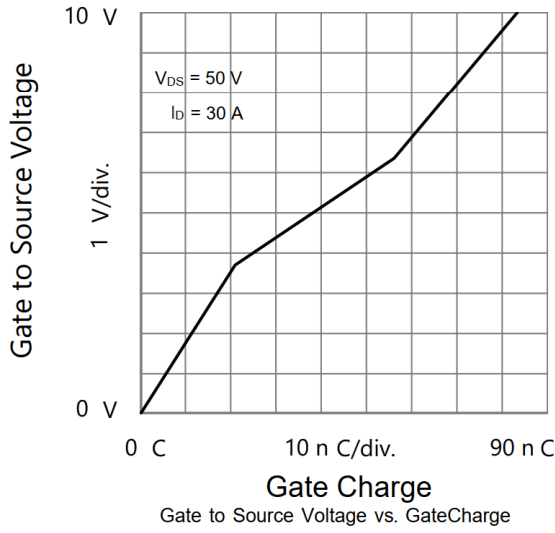
- Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.
- Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

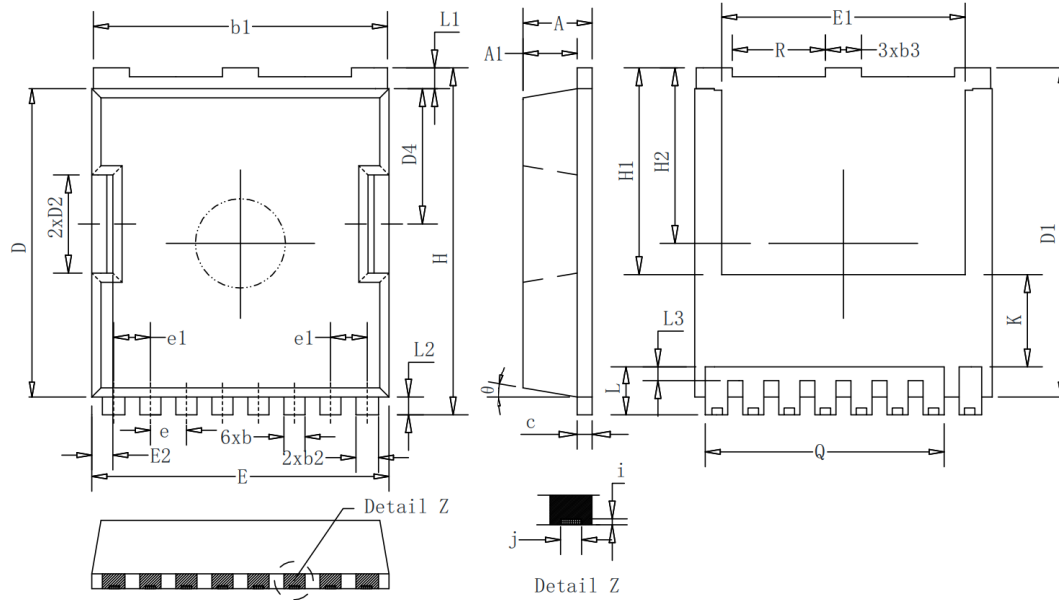
TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted)



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TOLL PACKAGE OUTLINE



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	2.05	2.30	2.65	E2	0.40	0.70	0.90
A1	1.50	1.80	2.10	H	11.30	11.70	12.10
b	0.50	0.70	0.90	H1	6.95 BSC		
b1	9.50	9.80	10.05	H2	5.90 BSC		
b2	0.50	0.75	1.00	i	0.10 REF		
b3	1.00	1.20	1.45	j	0.35 REF		
c	0.30	0.50	0.75	K	3.10 REF		
D	10.10	10.40	10.70	L	1.45	1.65	1.85
D1	10.80	11.10	11.40	L1	0.50	0.70	0.90
D2	3.10	3.30	3.50	L2	0.40	0.60	0.80
D4	4.35	4.55	4.80	L3	0.30	0.50	0.70
e	1.20 BSC			Q	7.95 REF		
e1	1.225 BSC			R	2.80	3.10	3.35
E	9.65	9.90	10.15	θ	10°REF		
E1	7.80	8.10	8.50				

°C

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