BORN SEMICONDUCTOR

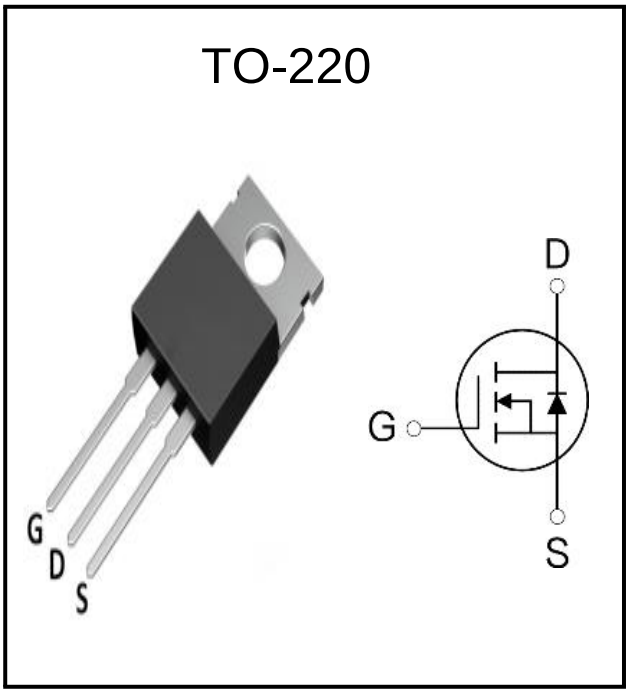
BME10N900

N-Channel MOSFET

Features

- $V_{(BR)DSS}$=100V, ID=70A
- $R_{DS(on)}$ @V_{GS}=10V, TYP=7.5mΩ
- Advanced Technology for DC-DC Converts
- Small Form Factor Thermally Efficient Package Enables Higher Density End Products
- Lead-Free Finish; RoHS Compliant
- Halogen and Antimony Free

Package



Applications

- PWM Applications
- Load Switch
- Power Management
- DC-DC Converters
- Wireless Chargers

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain - Source Voltage		100	V
V_{GS}	Gate - Source Voltage		±20	
I_D	Drain Current [1]	T_C=25°C	70	A
		T_C=100°C	45	
I_{DM}	Drain Current-Pulsed [2]		280	A
I_{AS}	Avalanche Current [3]		31	A
E_{AS}	Single Pulse Avalanche Energy [3]		240	mJ
P_D	Power Dissipation [4]	T_C=25°C	89	W
T_J	Junction Temperature Range		-55 to 150	°C
T_{stg}	Storage Temperature Range		-55 to 150	
$R_{\Theta JC}$	Thermal Resistance from Junction to Case		1.4	°C/W
$R_{\Theta JA}$	Thermal Resistance from Junction to Ambient		45	

BORN INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

Specifications are subject to change without notice.
Please refer to http://*www.born-tw.com* for current information.

Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D=250uA	100	–	–	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS}=0V	–	–	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS}=0V	–	–	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D=250uA	2.0	3.0	4.0	V
Static Drain-Source On Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	–	7.5	8.8	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} =50V,	–	1345	–	pF
Output Capacitance	C_{oss}	V_{GS} =0V,	–	605	–	
Reverse Transfer Capacitance	C_{rss}	f = 1MHz	–	11.5	–	
Gate Resistance	R_g	V_{GS}= V_{DS}=0V,f = 1MHz	–	1.6	–	Ω
Switching Characteristics						
Turn-On Delay time	$T_{d(on)}$	V_{DS}=50V,	–	6.9	–	ns
Turn-On Rise time	T_r	V_{GS}=10V,	–	4.6	–	
Turn-Off Delay Time	$T_{d(off)}$	I_D =20A,	–	13	–	
Turn-Off Fall time	T_f	R_G =3Ω	–	6.3	–	
Total Gate Charge	Q_g	V_{DS}=50V,	–	20	–	nC
Gate-Source Charge	Q_{gs}	V_{GS}=10V,	–	6.1	–	
Gate-Drain Charge	Q_{gd}	I_D=20A	–	4.2	–	
Source - Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=2A	–	0.7	1.2	V
ReverseRecoveryTime	t_{rr}	I_F=20A,di/dt=100A/us	–	45	–	nS
ReverseRecoveryCharge	Q_{rr}		–	72	–	nC

Notes:

(1) Computed continuous current assumes the condition of $T_{J(Max)}$ while the actual continuous current depends on the thermal & electro-mechanical application board design.

(2) Repetitive Rating: Pulse width limited by maximum junction temperature ($T_{J(Max)}$=150°C) .

(3) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2% .

(4) This single-pulse measurement was taken under the following condition [L=0.5mH,V_{GS}=10V,V_{DS}=50V] while it's value is limited by $T_{J(Max)}$=150°C.

BORN INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

Specifications are subject to change without notice.

Please refer to http://*www.born-tw.com* for current information.

Typical Performance Characteristics

Figure 1: Output Characteristics

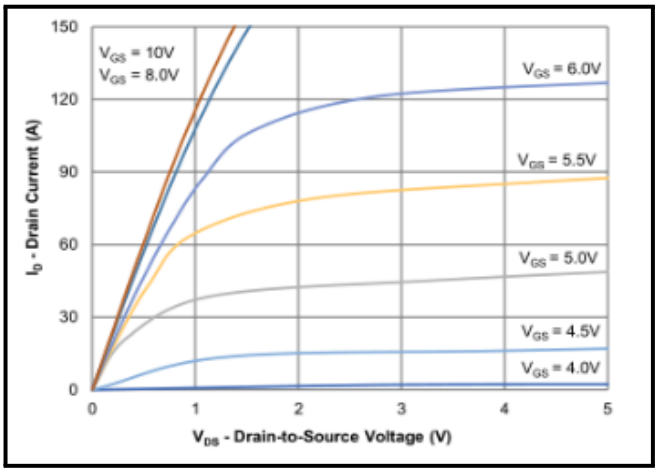


Figure 2: Transfer Characteristics

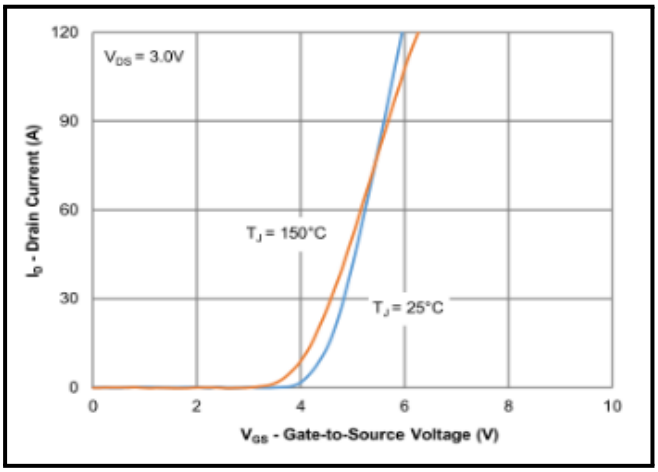


Figure 3: On-Resisitance vs. Drain Current

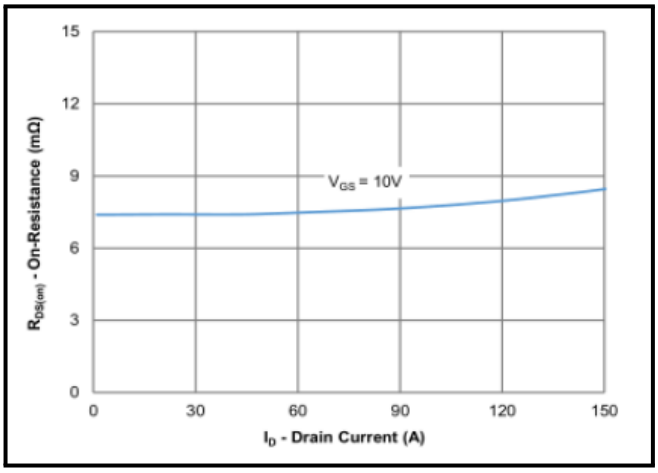


Figure 4: On-Resisitance vs. Junction Temperature

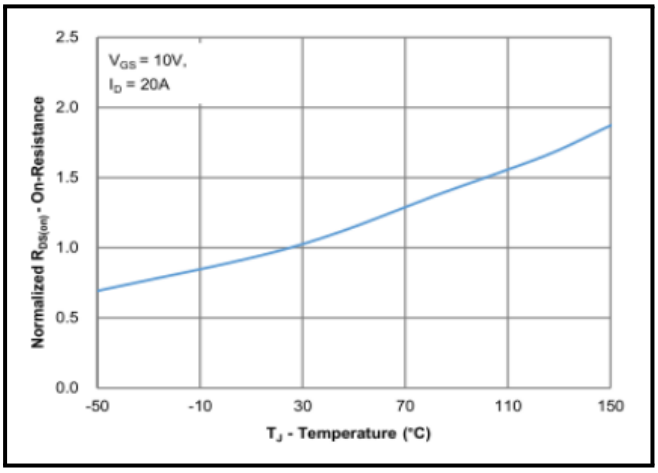


Figure 5: Diode Forward Voltage vs. Current

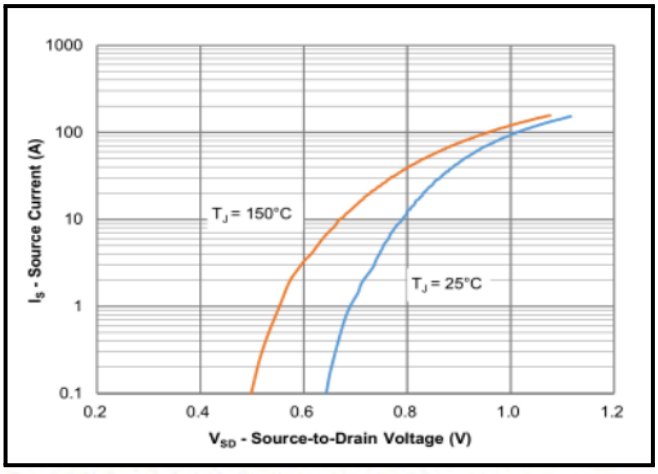
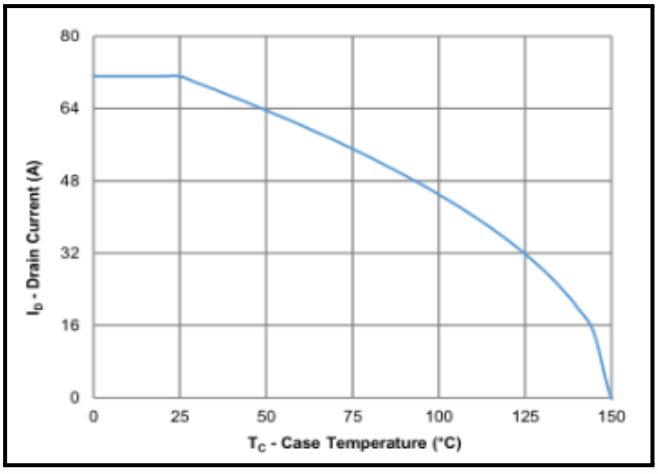


Figure 6: Drain Current vs. Case Temperature



BORN INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

Specifications are subject to change without notice.
Please refer to http://*www.born-tw.com* for current information.

Typical Performance Characteristics

Figure 7: Gate Charge Characteristics

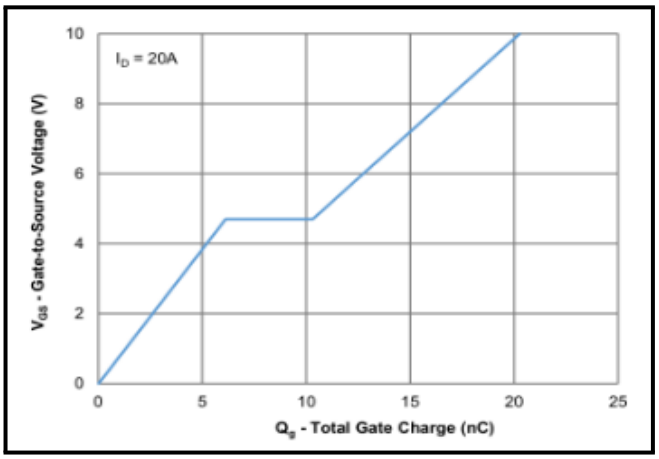


Figure 8: Capacitance Characteristics

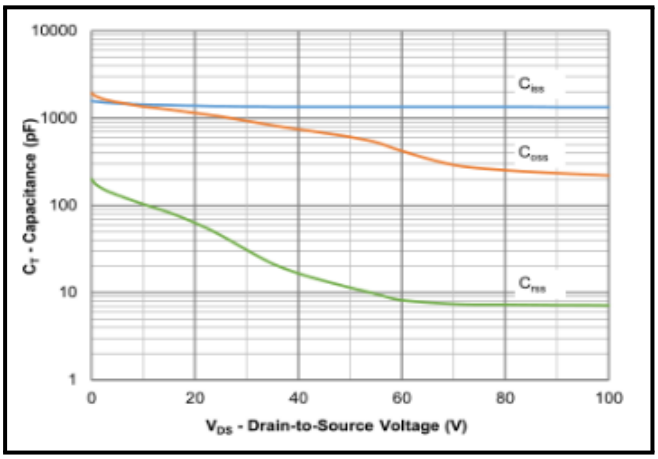


Figure 9: Safe Operating Area

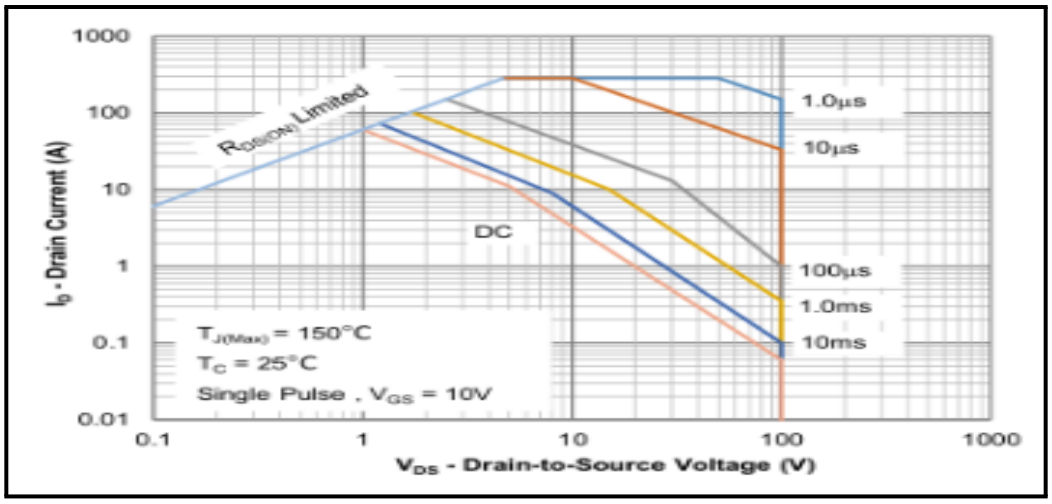
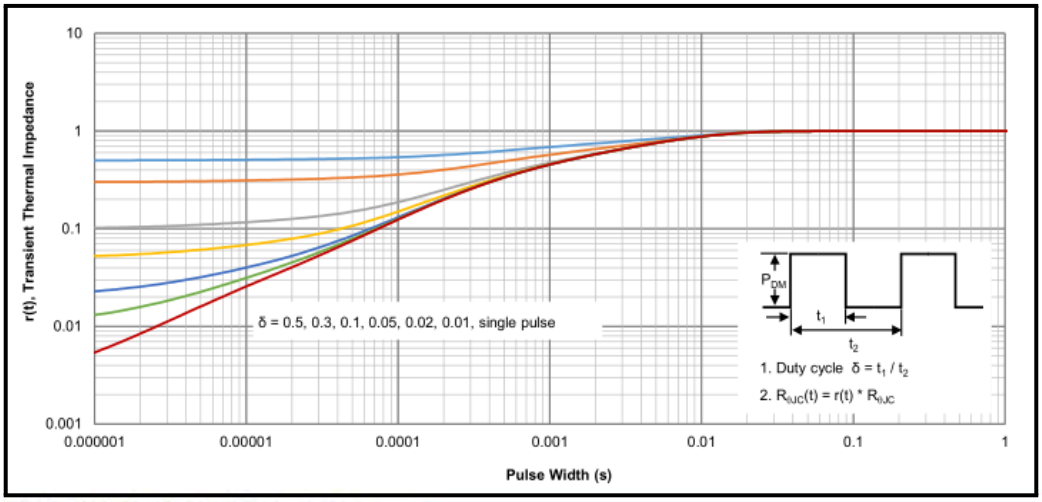


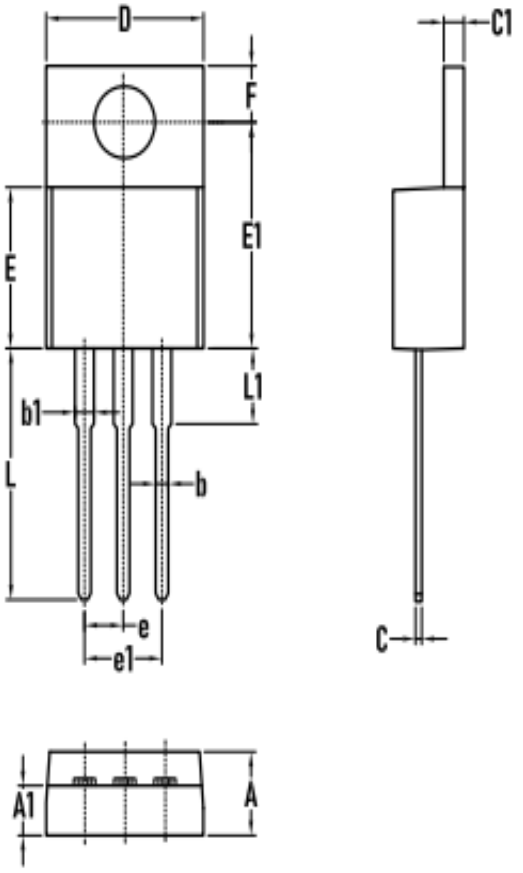
Figure 10: Transient Thermal Resistance



BORN INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

Specifications are subject to change without notice.
Please refer to http://*www.born-tw.com* for current information.

Packaging Tape -TO-220



Symbol	Millimeters		
	MIN.	TYP.	MAX.
A	4.30	4.50	4.70
A1	2.52	2.67	2.82
b	0.71	0.81	0.91
b1	1.17	1.27	1.37
C	0.30	0.40	0.50
C1	1.17	1.27	1.37
D	9.90	10.00	10.20
E	8.50	8.70	8.90
E1	12.00	12.25	12.50
e	2.44	2.54	2.64
e1	4.88	5.08	5.26
F	2.60	2.75	2.80
L	13.00	13.50	14.00
L1	3.80	4.00	4.20

BORN INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

Specifications are subject to change without notice.
Please refer to http://*www.born-tw.com* for current information.