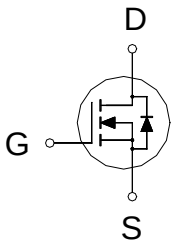
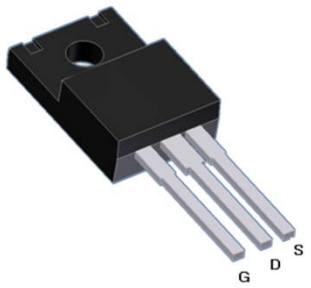
N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	200V
$R_{DSON\ (MAX.)}$	0.5Ω
I_D	7A





UIS, Rg 100% Tested

Pb-Free Lead Plating

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	T_C = 25 °C	I_D	7	A
	T_C = 100 °C		4.5	
Pulsed Drain Current[1]		I_{DM}	28	
Avalanche Current		I_{AS}	1.5	
Avalanche Energy	L = 1mH, ID=1.5A, RG=25Ω	E_{AS}	1.12	mJ
Repetitive Avalanche Energy[2]	L = 0.5mH	E_{AR}	0.56	
Power Dissipation	T_C = 25 °C	P_D	44	W
	T_C = 100 °C		17	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		2.8	°C / W
Junction-to-Ambient	$R_{\theta JA}$		65	

[1]Pulse width limited by maximum junction temperature.

[2]Duty cycle ≤ 1%

ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	200			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	3.0	4.0	5.0	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 160V, V_{GS} = 0V			1	μA
		V_{DS} = 130V, V_{GS} = 0V, T_J = 125 °C			25	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 10V, V_{GS} = 10V	7			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 3.5A		0.4	0.5	Ω
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 3.5A		2		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		803		pF
Output Capacitance	C_{oss}			19		
Reverse Transfer Capacitance	C_{rss}			16		
Gate Resistance	R_g	V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz		2.0		Ω
Total Gate Charge[1,2]	Q_g	V_{DS} = 100V, V_{GS} = 10V, I_D = 3.5A		21.3		nC
Gate-Source Charge[1,2]	Q_{gs}			2.9		
Gate-Drain Charge[1,2]	Q_{gd}			6		
Turn-On Delay Time[1,2]	$t_{d(on)}$	V_{DS} = 100V, I_D = 1A, V_{GS} = 10V, R_{GS} = 6Ω		20		nS
Rise Time[1,2]	t_r			60		
Turn-Off Delay Time[1,2]	$t_{d(off)}$			20		
Fall Time[1,2]	t_f			50		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				7	A
Pulsed Current[3]	I_{SM}				28	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0V			1.5	V
Reverse Recovery Time	t_{rr}	I_F = 7A, dI_F/dt = 100A / μS		1450		nS
Reverse Recovery Charge	Q_{rr}			0.85		μC

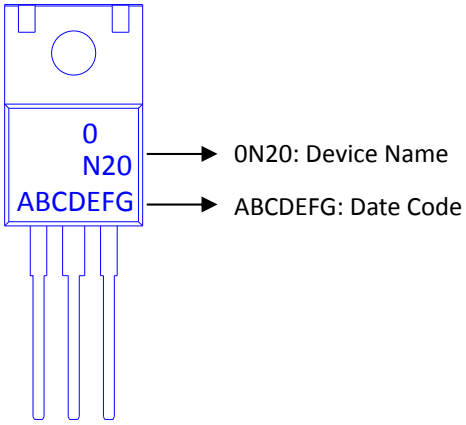
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%

[2]Independent of operating temperature.

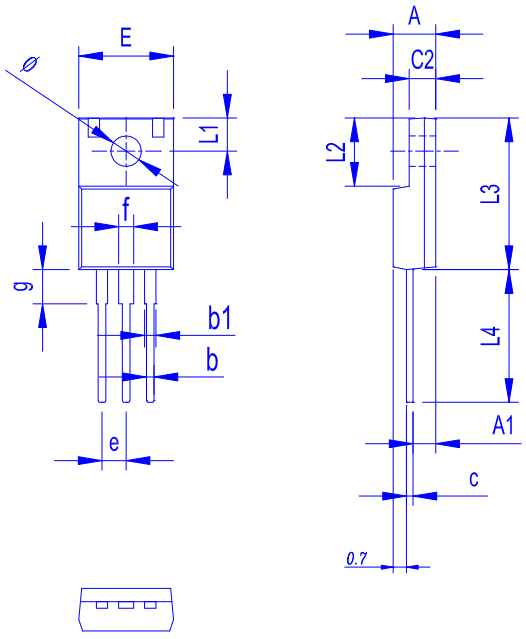
[3]Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: LB0N20GF for TO-220F



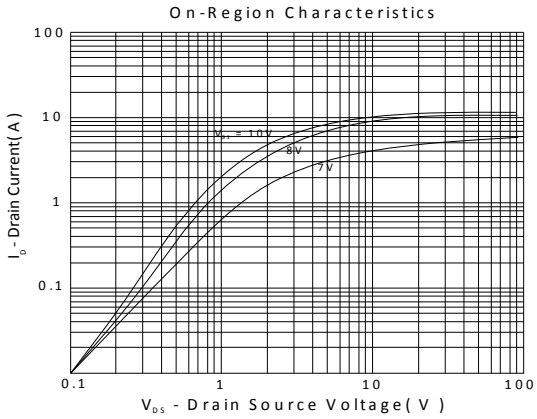
Outline Drawing

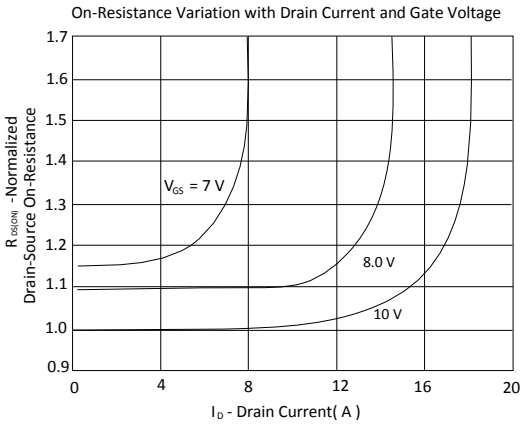


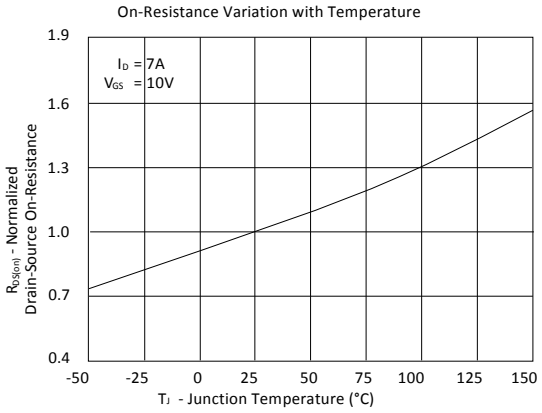
Dimension in mm

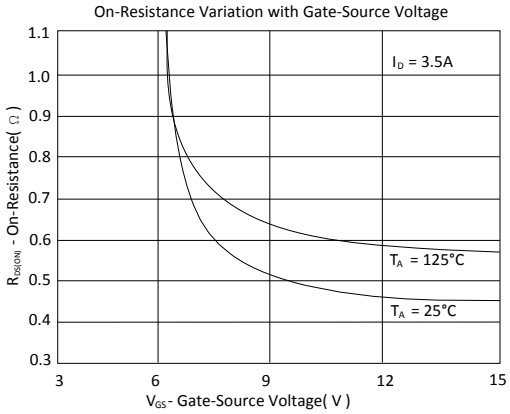
Dimension	A	A1	b	b1	c	c2	E	L1	L2	L3	L4	ø	e	f	g
Min.	4.20	1.95	0.50	0.90	0.45	2.34	9.70	2.70	6.48	14.80	12.50	3.00	2.35	1.18	3.13
Max.	4.90	2.96	1.05	1.50	0.80	3.20	10.36	3.80	7.50	16.30	14.50	3.60	2.75	1.90	4.00

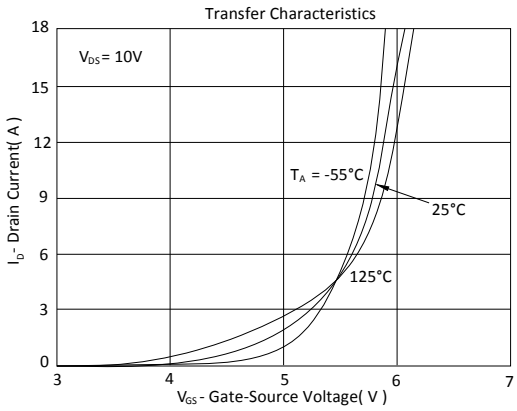
TYPICAL CHARACTERISTICS

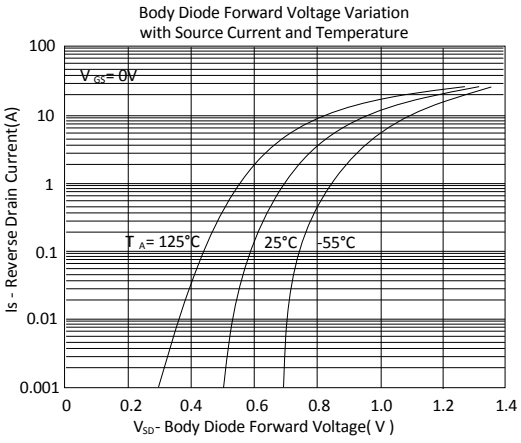




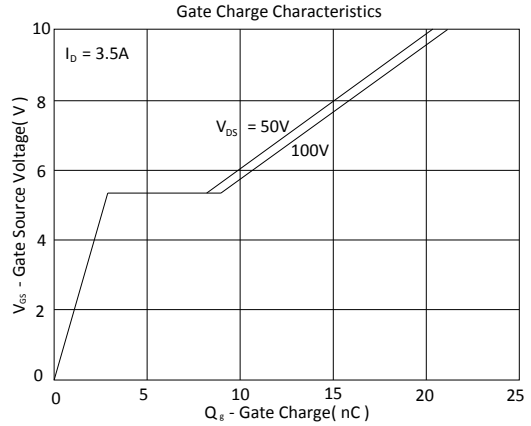




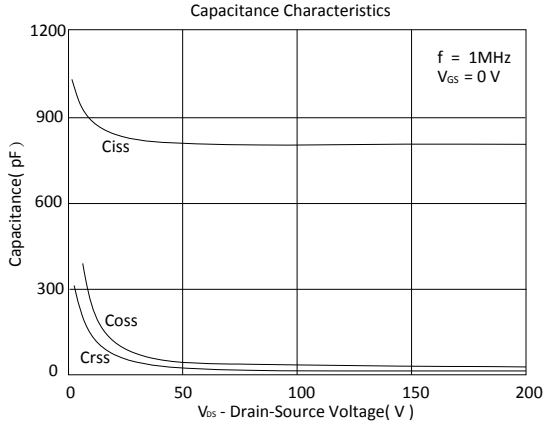




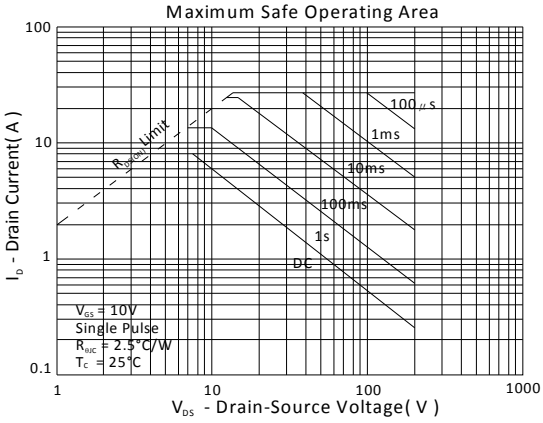
Gate Charge Characteristics



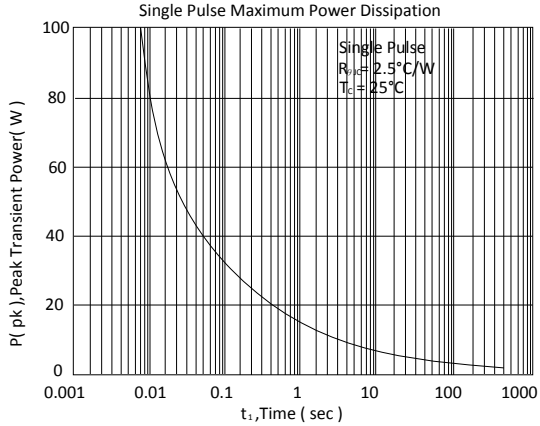
Capacitance Characteristics



Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve