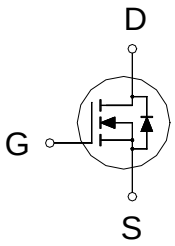
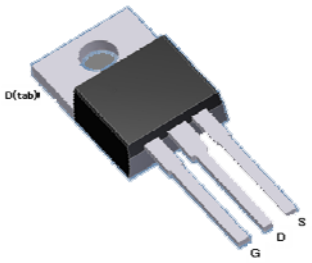
N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	30V
$R_{DSON\ (MAX.)}$	6mΩ
I_D	80A





UIS, Rg 100% Tested

Pb-Free Lead Plating & Halogen Free

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	80	A
	T_C = 100 °C		50	
Pulsed Drain Current[1]		I_{DM}	170	
Avalanche Current		I_{AS}	53	
Avalanche Energy	L = 0.1mH, I_D=53A, R_G=25Ω	E_{AS}	140	mJ
Repetitive Avalanche Energy[2]	L = 0.05mH	E_{AR}	40	
Power Dissipation	T_C = 25 °C	P_D	69	W
	T_C = 100 °C		27	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

100% UIS testing in condition of V_D=15V, L=0.1mH, V_G=10V, I_L=40A, Rated V_{DS}=25V N-CH

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		1.8	°C / W
Junction-to-Ambient	$R_{\theta JA}$		75	

[1]Pulse width limited by maximum junction temperature.

[2]Duty cycle ≤ 1%

ELECTRICAL CHARACTERISTICS (T_C = 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	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V			1	μA
		V_{DS} = 20V, V_{GS} = 0V, T_J = 125 °C			25	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 10V, V_{GS} = 10V	80			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 30A		5.3	6	mΩ
		V_{GS} = 4.5V, I_D = 24A		7.6	9.5	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 24A		25		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		1983		pF
Output Capacitance	C_{oss}			328		
Reverse Transfer Capacitance	C_{rss}			287		
Gate Resistance	R_g	V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz		1.2		Ω
Total Gate Charge[1,2]	Q_g(V_{GS}=10V)	V_{DS} = 15V, V_{GS} = 10V, I_D = 30A		34.6		nC
	Q_g(V_{GS}=5V)			21		
Gate-Source Charge[1,2]	Q_{gs}			4.8		
Gate-Drain Charge[1,2]	Q_{gd}			9.7		
Turn-On Delay Time[1,2]	$t_{d(on)}$	V_{DS} = 15V, I_D = 25A, V_{GS} = 10V, R_{GS} = 2.7Ω		12		nS
Rise Time[1,2]	t_r			20		
Turn-Off Delay Time[1,2]	$t_{d(off)}$			25		
Fall Time[1,2]	t_f			20		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				80	A
Pulsed Current[3]	I_{SM}				170	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0V			1.3	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100A / μS		32		nS
Peak Reverse Recovery Current	$I_{RM(REC)}$			200		A
Reverse Recovery Charge	Q_{rr}			12		nC

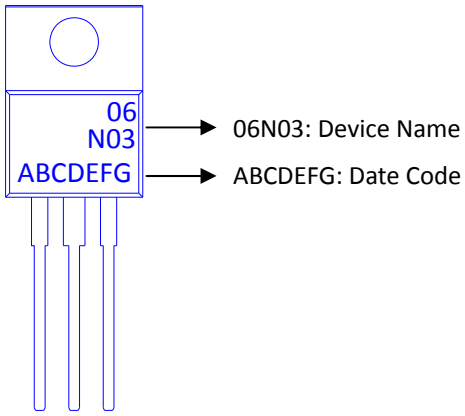
[1]Pulse test : Pulse Width ≤300μ sec, Duty Cycle ≤ 2%.

[2]Independent of operating temperature.

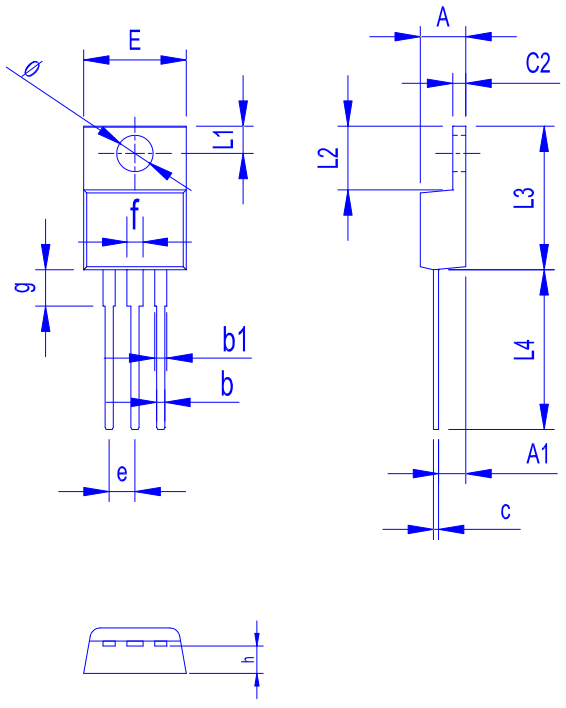
[3]Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: LB06N03G for TO-220



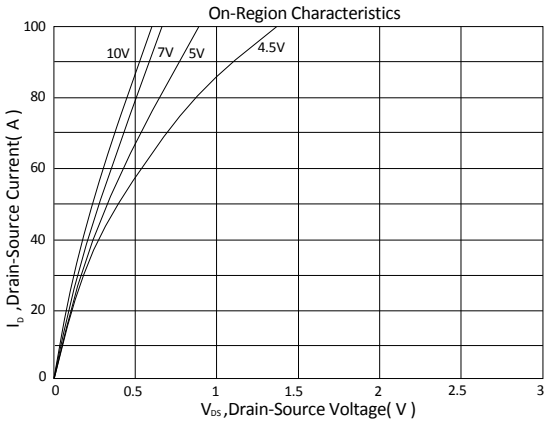
Outline Drawing

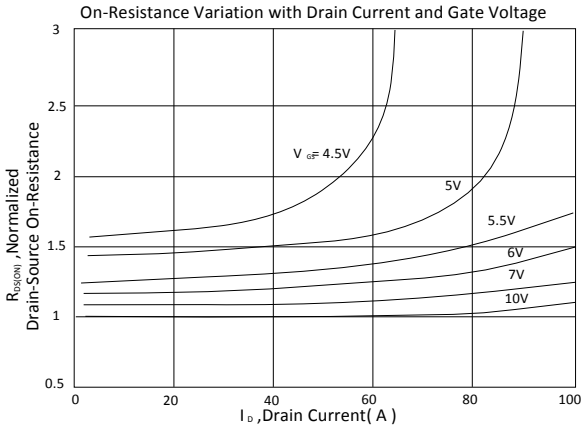


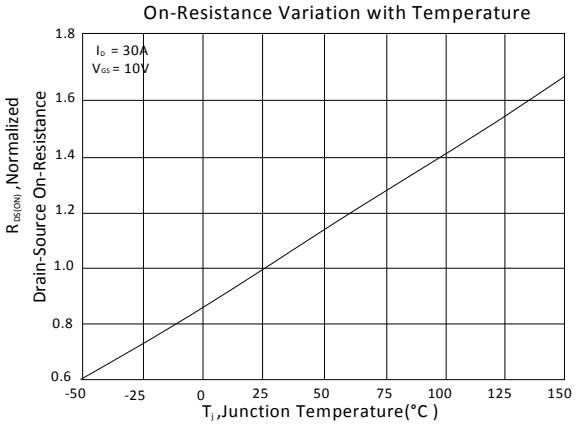
Dimension in mm

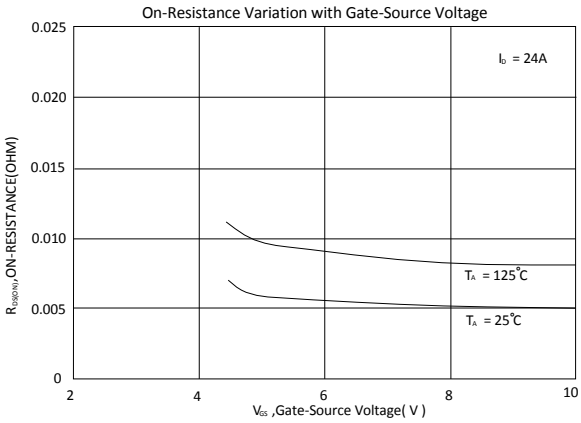
Dimension	A	b	b1	c	c2	E	L1	L2	L3	L4	ø	e	f	g	h
Min.	4.20	0.70	0.90	0.30	1.10	9.80	2.55	6.10	14.80	13.50	3.40	2.35	1.30	3.40	2.40
Max.	4.80	1.10	1.50	0.70	1.50	10.50	2.85	6.50	15.40	14.50	3.80	2.75	1.90	3.80	3.00

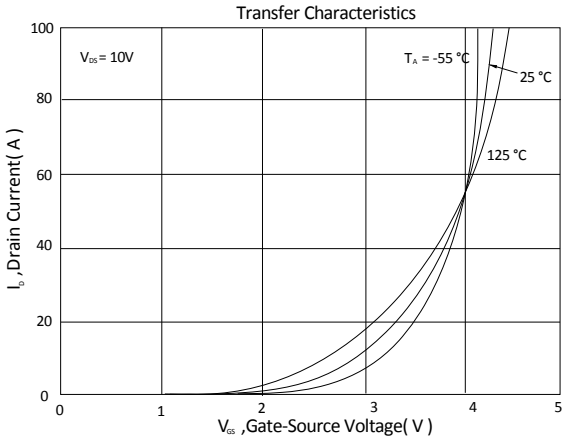
TYPICAL CHARACTERISTICS

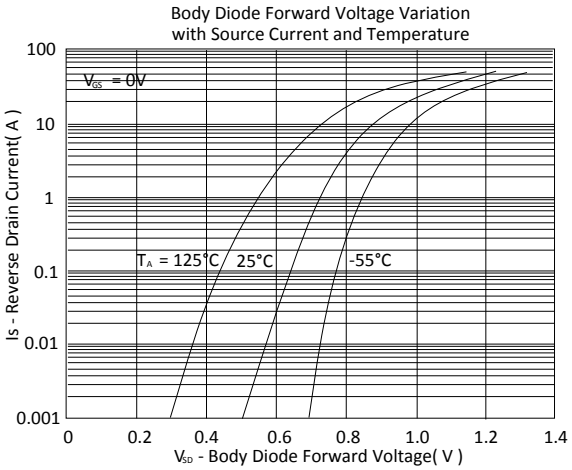




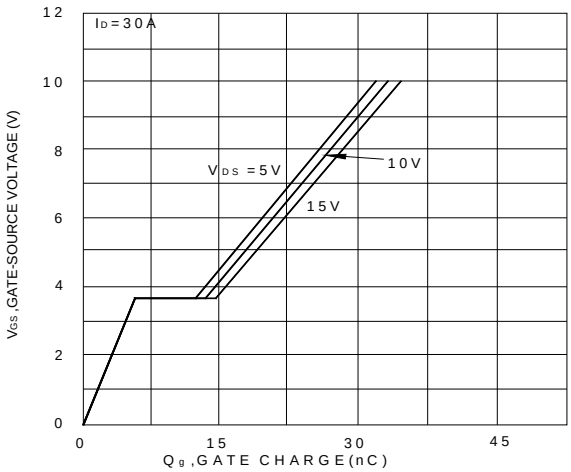




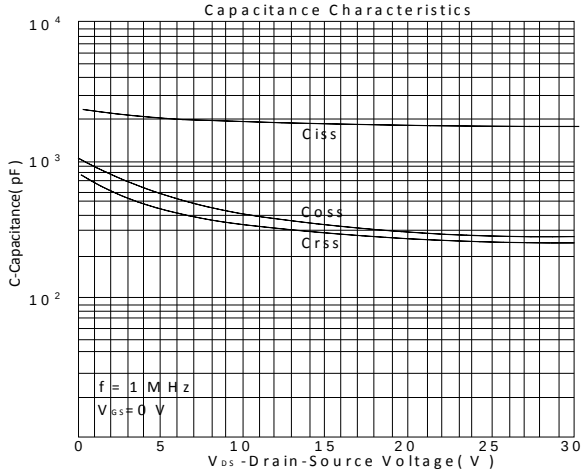




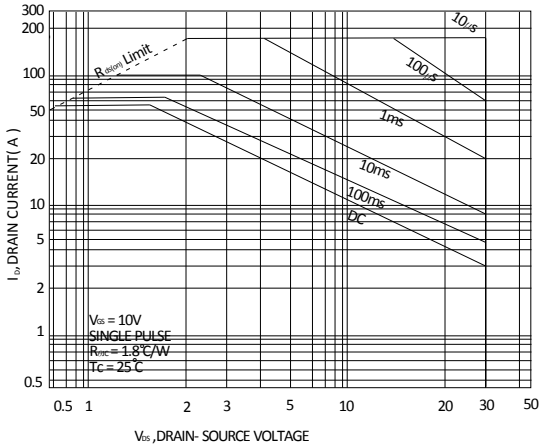
GATE CHARGE CHARACTERISTICS



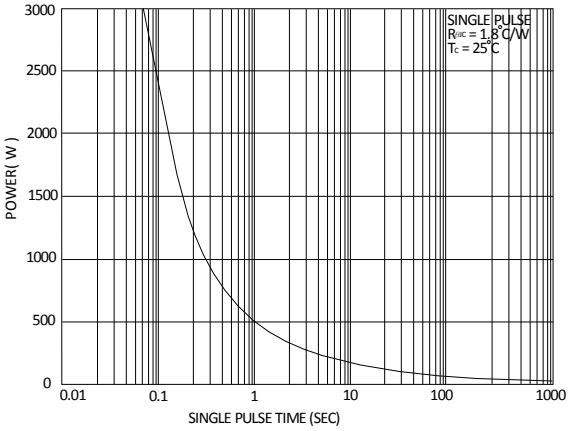
Capacitance Characteristics



MAXIMUM SAFE OPERATING AREA



SINGLE PULSE MAXIMUM POWER DISSIPATION



Transient Thermal Response Curve