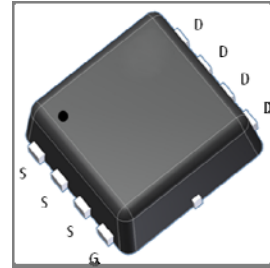


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV _{DSS}	40V
R _{DS(on)} (MAX.)	12.8mΩ
I _D	18A



UIS, R_g 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	18	A
	T _C = 100 °C		13	
Pulsed Drain Current ¹		I _{DM}	72	
Avalanche Current		I _{AS}	12	
Avalanche Energy	L = 0.1mH, I _D =12A, R _G =25Ω	E _{AS}	7.2	mJ
Repetitive Avalanche Energy ²	L = 0.05mH	E _{AR}	3.6	
Power Dissipation	T _C = 25 °C	P _D	21	W
	T _C = 100 °C		8.3	
Power Dissipation	T _A = 25 °C	P _D	2.5	W
	T _A = 100 °C		1	
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 _{θJC}		6	°C / W
Junction-to-Ambient ³	R _{θJA}		50	

¹Pulse width limited by maximum junction temperature.

²Duty cycle ≤ 1%

³50°C / W when mounted on a 1 in² pad of 2 oz copper.

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	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.5	2.0	3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 32V, V _{GS} = 0V			1	μA
		V _{DS} = 30V, V _{GS} = 0V, T _J = 125 °C			10	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 5V, V _{GS} = 10V	18			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 10V, I _D = 12A		10.8	12.8	mΩ
		V _{GS} = 4.5V, I _D = 7A		20	25	
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 12A		25		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 20V, f = 1MHz		1090		pF
Output Capacitance	C _{oss}			133		
Reverse Transfer Capacitance	C _{rss}			106		
Gate Resistance	R _g	V _{GS} = 15mV, V _{DS} = 0V, f = 1MHz		2.0		Ω
Total Gate Charge ^{1,2}	Q _g	V _{DS} = 20V, V _{GS} = 10V, I _D = 12A		24		nC
Gate-Source Charge ^{1,2}	Q _{gs}			3		
Gate-Drain Charge ^{1,2}	Q _{gd}			6.6		
Turn-On Delay Time ^{1,2}	t _{d(on)}	V _{DS} = 20V, I _D = 1A, V _{GS} = 10V, R _{GS} = 6Ω		3		nS
Rise Time ^{1,2}	t _r			11		
Turn-Off Delay Time ^{1,2}	t _{d(off)}			16		
Fall Time ^{1,2}	t _f			6		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _C = 25 °C)						
Continuous Current	I _S				2.5	A
Pulsed Current ³	I _{SM}				10	
Forward Voltage ¹	V _{SD}	I _F = I _S , V _{GS} = 0V			1.2	V
Reverse Recovery Time	t _{rr}	I _F = I _S , dI _F /dt = 100A / μS		18		nS
Reverse Recovery Charge	Q _{rr}			10		nC

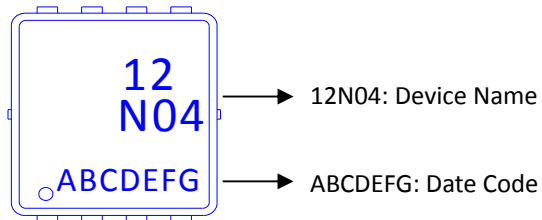
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

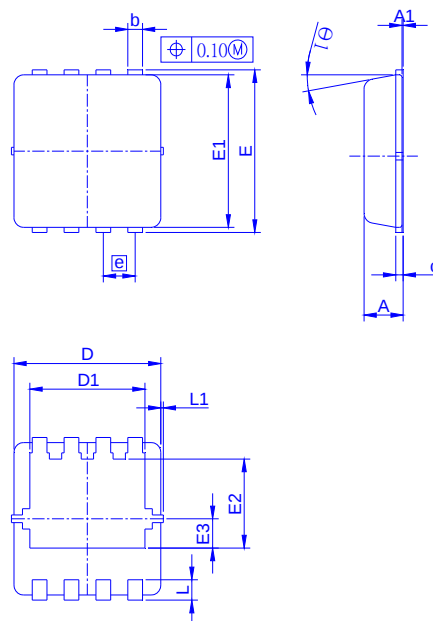
³Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: LB12N04B for EDFN 3 x 3



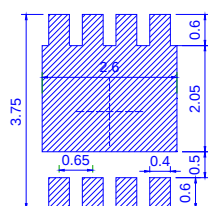
Outline Drawing



Dimension in mm

Dimension	A	A1	b	c	D	D1	E	E1	E2	E3	e	L	L1	θ1
Min.	0.70	0	0.24	0.10	2.95	2.25	3.15	2.95	1.65			0.30		0°
Typ.	0.80		0.30	0.152	3.00	2.35	3.20	3.00	1.75	0.575	0.65	0.40	0.13	10°
Max.	0.90	0.05	0.37	0.25	3.15	2.45	3.40	3.15	1.96			0.50		12°

Recommended minimum pads



TYPICAL CHARACTERISTICS

