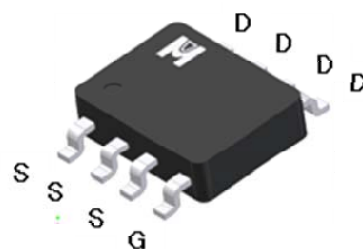
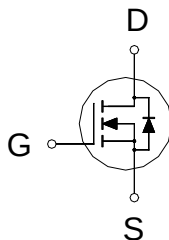


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	100V
$R_{DS(on)} (MAX.)$	12m Ω
I_D	12A



UIS, R_g 100% Tested

Pb-Free Lead Plating & Halogen Free



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ³	$T_A = 25^\circ\text{C}$	I_D	12	A
	$T_A = 100^\circ\text{C}$		7.3	
Pulsed Drain Current ¹		I_{DM}	48	
Avalanche Current		I_{AS}	12	mJ
Avalanche Energy	$L = 0.1\text{mH}, I_D = 12\text{A}, R_G = 25\Omega$	E_{AS}	7.2	
Repetitive Avalanche Energy ²	$L = 0.05\text{mH}$	E_{AR}	3.6	
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	2.5	W
	$T_A = 100^\circ\text{C}$		1	
Operating Junction & Storage Temperature Range		T_{j}, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		25	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		50	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

³The maximum current rating is package limited.

ELECTRICAL CHARACTERISTICS ($T_J = 25\text{ }^{\circ}\text{C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	2.0	3.0	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 80V, V_{GS} = 0V$			1	μA
		$V_{DS} = 70V, V_{GS} = 0V, T_J = 125\text{ }^{\circ}C$			25	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 10V, V_{GS} = 10V$	12			A
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 12A$		10	12	m Ω
		$V_{GS} = 4.5V, I_D = 10A$		13.5	17	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 12A$		45		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 50V, f = 1MHz$		2130		pF
Output Capacitance	C_{oss}			336		
Reverse Transfer Capacitance	C_{rss}			29		
Gate Resistance	R_g	$V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz$		1.5		Ω
Total Gate Charge ^{1,2}	$Q_g(V_{GS}=10V)$	$V_{DS} = 50V, V_{GS} = 10V,$ $I_D = 12A$		38		nC
	$Q_g(V_{GS}=4.5V)$			23		
Gate-Source Charge ^{1,2}	Q_{gs}			10		
Gate-Drain Charge ^{1,2}	Q_{gd}			8.2		
Turn-On Delay Time ^{1,2}	$t_{d(on)}$	$V_{DS} = 50V,$ $I_D = 12A, V_{GS} = 10V, R_{GS} = 6\Omega$		6		nS
Rise Time ^{1,2}	t_r			10		
Turn-Off Delay Time ^{1,2}	$t_{d(off)}$			8		
Fall Time ^{1,2}	t_f			25		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _C = 25 °C)						
Continuous Current	I_S				2.3	A
Pulsed Current ³	I_{SM}				9.2	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0V$			1.2	V
Reverse Recovery Time	t_{rr}	$I_F = 12A, dI_F/dt = 500A / \mu S$		25		nS
Reverse Recovery Charge	Q_{rr}			120		nC

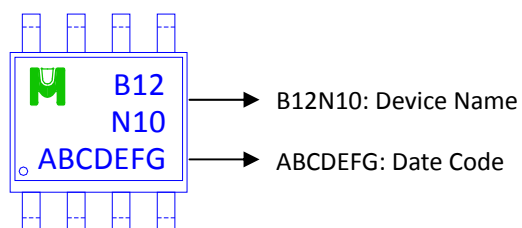
¹Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

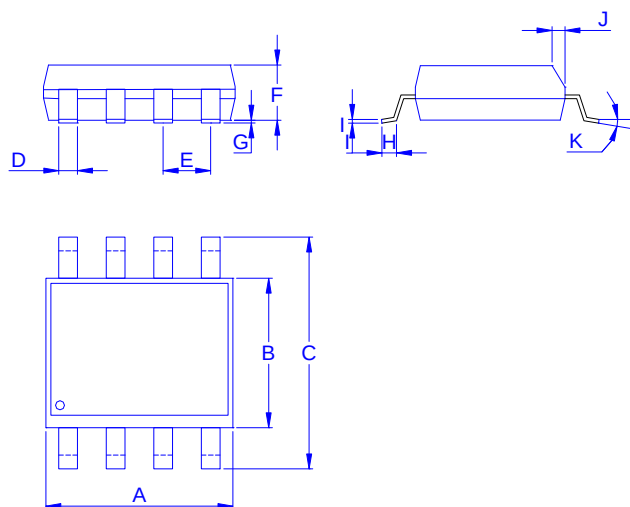
³Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: EMB12N10G for SOP-8



Outline Drawing



Dimension in mm

Dimension	A	B	C	D	E	F	G	H	I	J	K
Min.	4.70	3.70	5.80	0.33		1.20	0.08	0.40	0.19	0.25	0°
Typ.					1.27						
Max.	5.10	4.10	6.20	0.51		1.62	0.28	0.83	0.26	0.50	8°



TYPICAL CHARACTERISTICS

