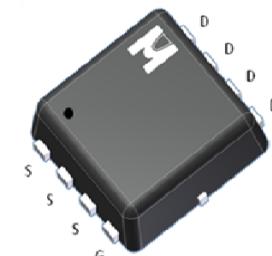
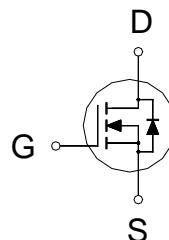


## N-Channel Logic Level Enhancement Mode Field Effect Transistor

## Product Summary:

$BV_{DSS}$	30V
$R_{DS(on)}(\text{MAX.})$	8m $\Omega$
$I_D$	22A



UIS, Rg 100% Tested

Pb-Free Lead Plating &amp; Halogen Free

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		$V_{GS}$	±20	V
Continuous Drain Current	$T_c = 25^\circ\text{C}$	$I_D$	22	A
	$T_c = 100^\circ\text{C}$		16	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	88	
Avalanche Current		$I_{AS}$	40	
Avalanche Energy	$L = 0.1\text{mH}, I_D=40\text{A}, RG=25\Omega$	$E_{AS}$	80	mJ
Repetitive Avalanche Energy <sup>2</sup>	$L = 0.05\text{mH}$	$E_{AR}$	40	
Power Dissipation	$T_c = 25^\circ\text{C}$	$P_D$	21	W
	$T_c = 100^\circ\text{C}$		8.3	
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	°C

100% UIS testing in condition of  $V_D=15\text{V}$ ,  $L=0.1\text{mH}$ ,  $V_G=10\text{V}$ ,  $I_L=20\text{A}$ , Rated  $V_{DS}=25\text{V}$  N-CH

## THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$	6	50	°C / W
Junction-to-Ambient <sup>3</sup>	$R_{\theta JA}$			

<sup>1</sup>Pulse width limited by maximum junction temperature.<sup>2</sup>Duty cycle ≤ 1%<sup>3</sup>50°C / W when mounted on a 1 in<sup>2</sup> pad of 2 oz copper.

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	30			V
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1	1.7	3	
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 24V, V_{GS} = 0V$			1	$\mu\text{A}$
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 125^\circ\text{C}$			25	
On-State Drain Current <sup>1</sup>	$I_{D(\text{ON})}$	$V_{DS} = 10V, V_{GS} = 10V$	22			A
Drain-Source On-State Resistance <sup>1</sup>	$R_{DS(\text{ON})}$	$V_{GS} = 10V, I_D = 13A$		7	8	$\text{m}\Omega$
		$V_{GS} = 4.5V, I_D = 9A$		10	13	
Forward Transconductance <sup>1</sup>	$g_{fs}$	$V_{DS} = 5V, I_D = 13A$		22		S
DYNAMIC						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = 15V, f = 1\text{MHz}$		975		$\text{pF}$
Output Capacitance	$C_{oss}$			230		
Reverse Transfer Capacitance	$C_{rss}$			205		
Gate Resistance	$R_g$	$V_{GS} = 15\text{mV}, V_{DS} = 0V, f = 1\text{MHz}$		1.8		$\Omega$
Total Gate Charge <sup>1,2</sup>	$Q_g(V_{GS}=10V)$	$V_{DS} = 15V, V_{GS} = 10V, I_D = 13A$		30.3		$\text{nC}$
	$Q_g(V_{GS}=4.5V)$			17		
Gate-Source Charge <sup>1,2</sup>	$Q_{gs}$			3.5		
Gate-Drain Charge <sup>1,2</sup>	$Q_{gd}$			9.1		
Turn-On Delay Time <sup>1,2</sup>	$t_{d(on)}$	$V_{DS} = 15V, I_D = 1A, V_{GS} = 10V, R_{GS} = 6\Omega$		10		$\text{ns}$
Rise Time <sup>1,2</sup>	$t_r$			18		
Turn-Off Delay Time <sup>1,2</sup>	$t_{d(off)}$			25		
Fall Time <sup>1,2</sup>	$t_f$			25		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ( $T_c = 25^\circ\text{C}$ )						
Continuous Current	$I_S$	$I_F = I_S, V_{GS} = 0V$			3.5	$\text{A}$
Pulsed Current <sup>3</sup>	$I_{SM}$				14	
Forward Voltage <sup>1</sup>	$V_{SD}$				1.2	V
Reverse Recovery Time	$t_{rr}$			22		$\text{nS}$
Peak Reverse Recovery Current	$I_{RM(\text{REC})}$			50		A
Reverse Recovery Charge	$Q_{rr}$			12		$\text{nC}$

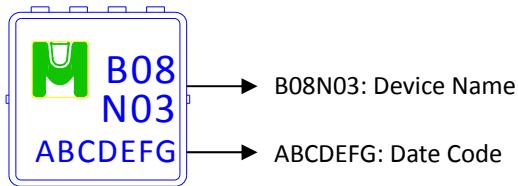
<sup>1</sup>Pulse test : Pulse Width  $\leq$  300  $\mu$ sec, Duty Cycle  $\leq$  2%.

<sup>2</sup>Independent of operating temperature.

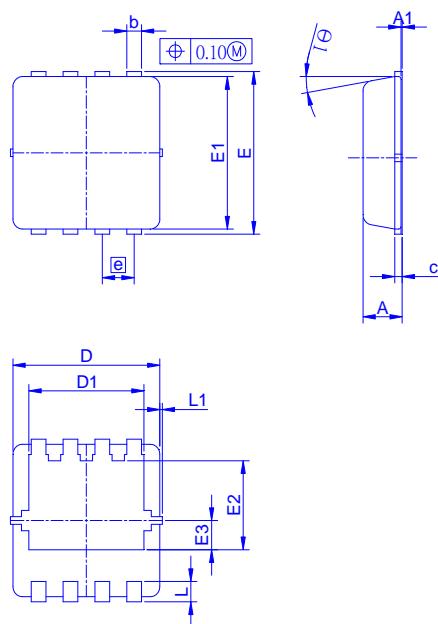
<sup>3</sup>Pulse width limited by maximum junction temperature.

### Ordering & Marking Information:

Device Name: EMB08N03V 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

