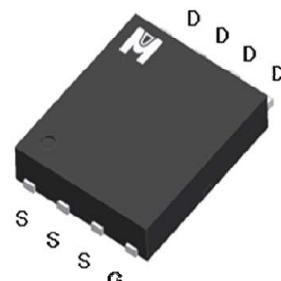
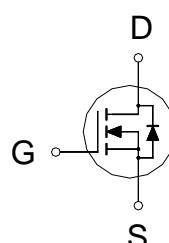


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV <sub>DSS</sub>	30V
R <sub>DSON</sub> (MAX.)	11.5mΩ
I <sub>D</sub>	25A



UIS, R<sub>G</sub> 100% Tested

Pb-Free Lead Plating & Halogen Free



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V <sub>GS</sub>	±20	V
Continuous Drain Current	$T_c = 25^\circ\text{C}$	I <sub>D</sub>	25	A
	$T_c = 100^\circ\text{C}$		20	
Pulsed Drain Current <sup>1</sup>		I <sub>DM</sub>	100	
Avalanche Current		I <sub>AS</sub>	30	
Avalanche Energy	L = 0.1mH, ID=30A, RG=25Ω	E <sub>AS</sub>	45	mJ
Repetitive Avalanche Energy <sup>2</sup>	L = 0.05mH	E <sub>AR</sub>	22.5	
Power Dissipation	$T_c = 25^\circ\text{C}$	P <sub>D</sub>	35	W
	$T_c = 100^\circ\text{C}$		14	
Operating Junction & Storage Temperature Range		T <sub>j</sub> , T <sub>stg</sub>	-55 to 150	°C

100% UIS testing in condition of V<sub>D</sub>=15V, L=0.1mH, V<sub>G</sub>=10V, I<sub>L</sub>=15A, Rated V<sub>DS</sub>=25V N-CH

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	R <sub>θJC</sub>	3.5	3.5	°C / W
Junction-to-Ambient <sup>3</sup>	R <sub>θJA</sub>		62	

<sup>1</sup>Pulse width limited by maximum junction temperature.

<sup>2</sup>Duty cycle ≤ 1%

<sup>3</sup>62°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	
<b>STATIC</b>						
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>	$I_{D(\text{ON})}$	$V_{DS} = 5V, V_{GS} = 10V$	25			A
Drain-Source On-State Resistance <sup>1</sup>	$R_{DS(\text{ON})}$	$V_{GS} = 10V, I_D = 15A$		9.7	11.5	$\text{m}\Omega$
		$V_{GS} = 4.5V, I_D = 10A$		17	23	
Forward Transconductance <sup>1</sup>	$g_{fs}$	$V_{DS} = 5V, I_D = 15A$		15		S
<b>DYNAMIC</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = 15V, f = 1\text{MHz}$		762		$\text{pF}$
Output Capacitance	$C_{oss}$			150		
Reverse Transfer Capacitance	$C_{rss}$			130		
Gate Resistance	$R_g$	$V_{GS} = 15\text{mV}, V_{DS} = 0V, f = 1\text{MHz}$		2.0		$\Omega$
Total Gate Charge <sup>1,2</sup>	$Q_g(V_{GS}=10V)$	$V_{DS} = 15V, V_{GS} = 10V, I_D = 15A$		15.2		$\text{nC}$
	$Q_g(V_{GS}=4.5V)$			10		
Gate-Source Charge <sup>1,2</sup>	$Q_{gs}$			2.1		
Gate-Drain Charge <sup>1,2</sup>	$Q_{gd}$			6.5		
Turn-On Delay Time <sup>1,2</sup>	$t_{d(on)}$	$V_{DS} = 15V, I_D = 1A, V_{GS} = 10V, R_{GS} = 2.7\Omega$		8		$\text{ns}$
Rise Time <sup>1,2</sup>	$t_r$			6		
Turn-Off Delay Time <sup>1,2</sup>	$t_{d(off)}$			18		
Fall Time <sup>1,2</sup>	$t_f$			3		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (<math>T_c = 25^\circ\text{C}</math>)</b>						
Continuous Current	$I_S$	$I_F = I_S, V_{GS} = 0V$			25	$\text{A}$
Pulsed Current <sup>3</sup>	$I_{SM}$				100	
Forward Voltage <sup>1</sup>	$V_{SD}$				1.3	
Reverse Recovery Time	$t_{rr}$			18		
Peak Reverse Recovery Current	$I_{RM(\text{REC})}$			100		
Reverse Recovery Charge	$Q_{rr}$			10		

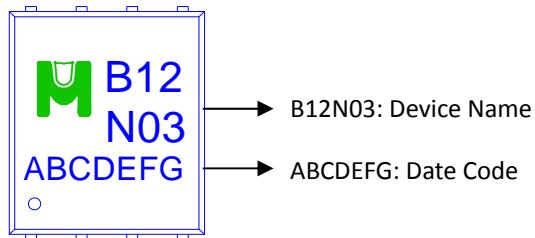
<sup>1</sup>Pulse test : Pulse Width  $\leq$  300  $\mu$ sec, Duty Cycle  $\leq$  2%.

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

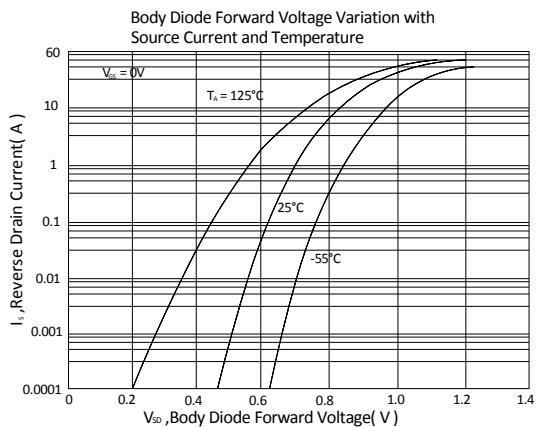
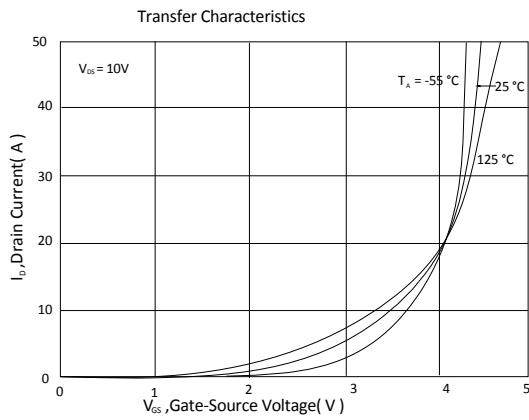
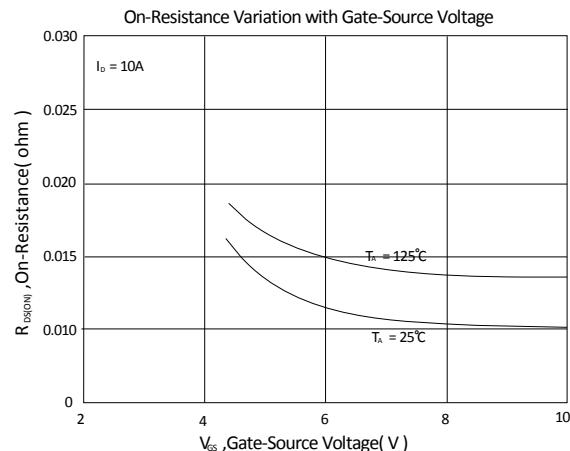
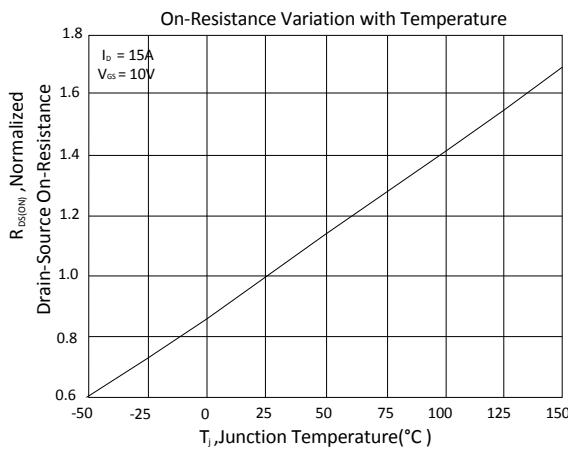
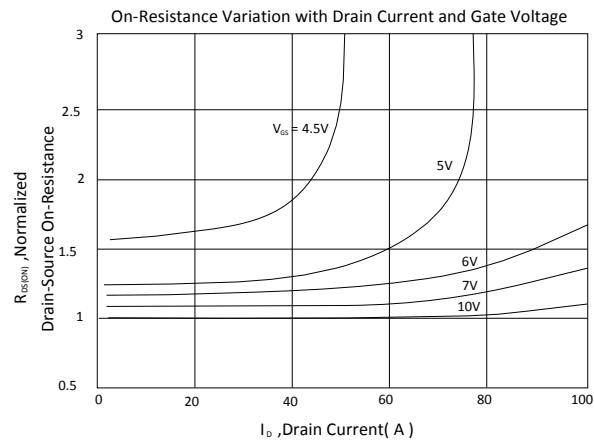
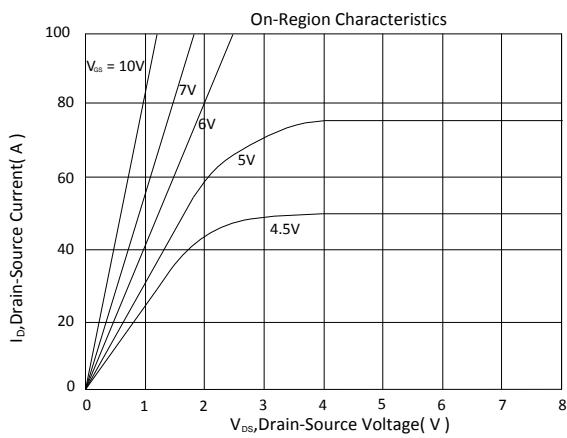
<sup>3</sup>Pulse width limited by maximum junction temperature.

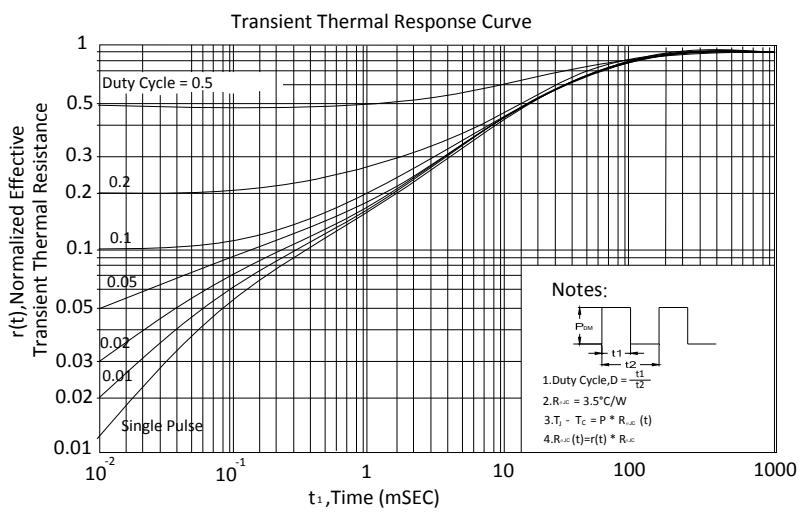
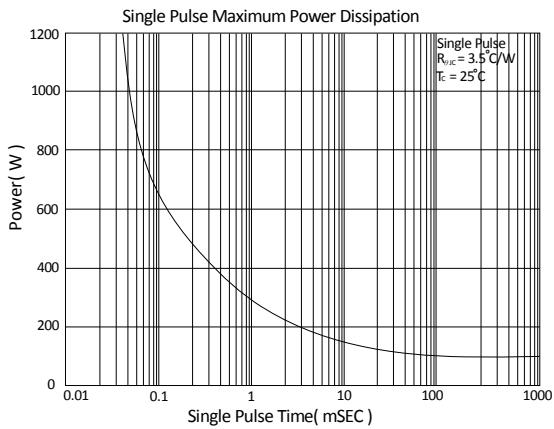
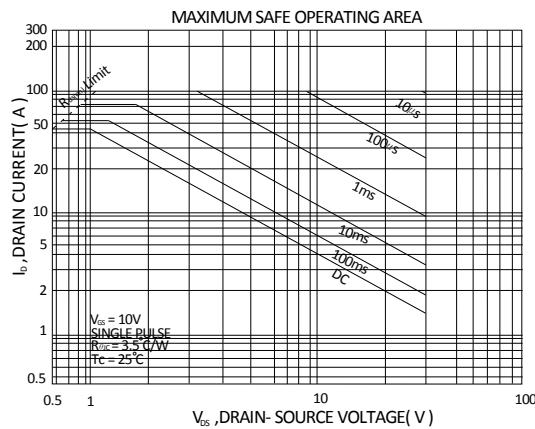
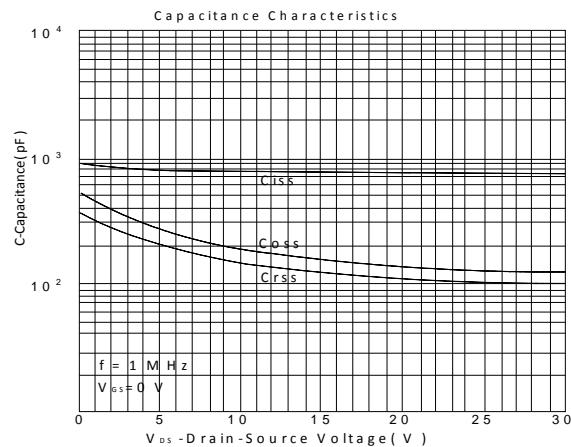
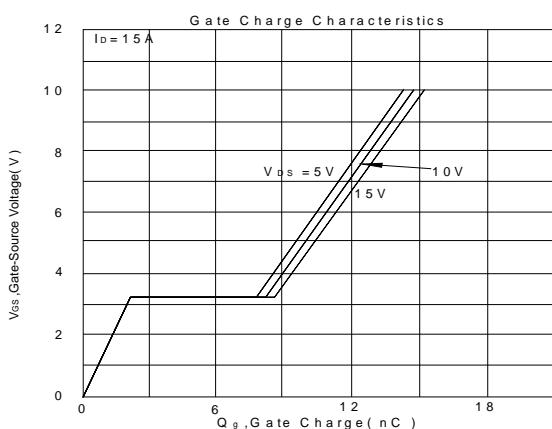
**Ordering & Marking Information:**

Device Name: EMB12N03H for EDFN 5 x 6

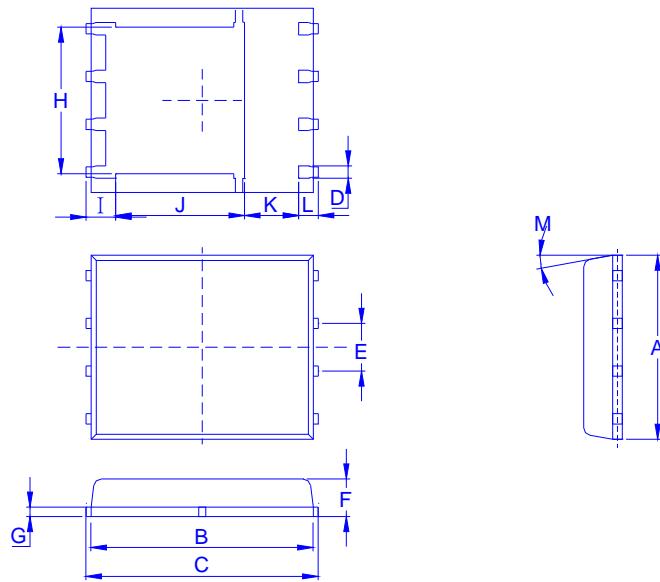


## TYPICAL CHARACTERISTICS





Outline Drawing



Dimension in mm

Dimension	A	B	C	D	E	F	G	H	I	J	K	L	M
Min.	4.80	5.50	5.90	0.3		0.85	0.15	3.67	0.41	3.00	0.94	0.45	0°
Typ.					1.27								
Max.	5.30	5.90	6.15	0.51		1.20	0.30	4.54	0.85	3.92	1.7	0.71	12°

Recommended minimum pads

