

N-Channel Logic Level Enhancement Mode Field Effect Transistor

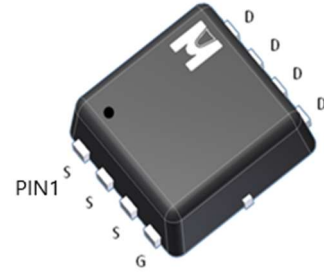
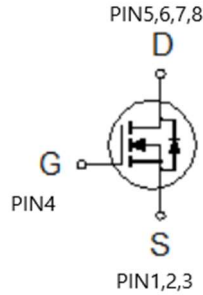
Product Summary:

BV <sub>DSS</sub>	30V
R <sub>DS(on)</sub> (MAX.)	4.0mΩ
I <sub>D</sub>	32A

N-Channel MOSFET

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

Pb-Free Lead Plating & Halogen Free



ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V <sub>GS</sub>	±20	V
Continuous Drain Current	T <sub>C</sub> = 25 °C	I <sub>D</sub>	32	A
	T <sub>A</sub> = 25 °C		20	
	T <sub>C</sub> = 100 °C		22	
Pulsed Drain Current <sup>1</sup>		I <sub>DM</sub>	128	
Avalanche Current		I <sub>AS</sub>	32	
Avalanche Energy	L = 0.1mH, I <sub>AS</sub> = 32A, R <sub>G</sub> = 25Ω	E <sub>AS</sub>	51.2	mJ
Repetitive Avalanche Energy <sup>2</sup>	L = 0.05mH	E <sub>AR</sub>	25.6	
Power Dissipation	T <sub>C</sub> = 25 °C	P <sub>D</sub>	21	W
	T <sub>C</sub> = 100 °C		8.3	
Power Dissipation	T <sub>A</sub> = 25 °C	P <sub>D</sub>	2.5	W
	T <sub>A</sub> = 100 °C		1	
Operating Junction & Storage Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	R <sub>θJC</sub>		6	°C / W
Junction-to-Ambient	R <sub>θJA</sub>		50	

<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<sub>J</sub> = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1	1.5	3	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V			1	μA
		V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125 °C			25	
On-State Drain Current <sup>1</sup>	I <sub>D(ON)</sub>	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 10V	32			A
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A		3.2	4.0	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 15A		4.9	6.6	
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 16A		26		S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 15V, f = 1MHz		2806		pF
Output Capacitance	C <sub>oss</sub>			378		
Reverse Transfer Capacitance	C <sub>rss</sub>			202		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> = 15mV, V <sub>DS</sub> = 0V, f = 1MHz		2.4		Ω
Total Gate Charge <sup>1,2</sup>	Q <sub>g</sub> (V <sub>GS</sub> =10V)	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 16A		42		nC
	Q <sub>g</sub> (V <sub>GS</sub> =4.5V)			21		
Gate-Source Charge <sup>1,2</sup>	Q <sub>gs</sub>			4.7		
Gate-Drain Charge <sup>1,2</sup>	Q <sub>gd</sub>			9.3		
Turn-On Delay Time <sup>1,2</sup>	t <sub>d(on)</sub>		V <sub>DS</sub> = 15V, I <sub>D</sub> = 1A, V <sub>GS</sub> = 10V, R <sub>GS</sub> = 2.7Ω		18	
Rise Time <sup>1,2</sup>	t <sub>r</sub>			15		
Turn-Off Delay Time <sup>1,2</sup>	t <sub>d(off)</sub>			55		
Fall Time <sup>1,2</sup>	t <sub>f</sub>			20		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>C</sub> = 25 °C)</b>						
Continuous Current	I <sub>S</sub>				32	A
Pulsed Current <sup>3</sup>	I <sub>SM</sub>				128	
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = 16A, V <sub>GS</sub> = 0V			1.3	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = I <sub>S</sub> , dI <sub>F</sub> /dt = 100A / μS		30		nS
Peak Reverse Recovery Current	I <sub>RM(REC)</sub>			200		A
Reverse Recovery Charge	Q <sub>rr</sub>			10		nC

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

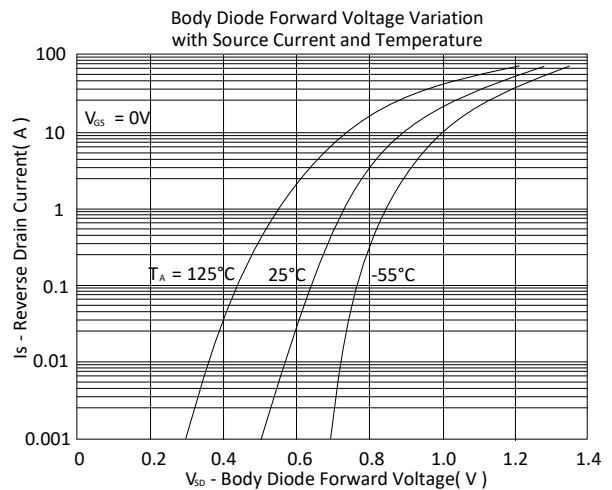
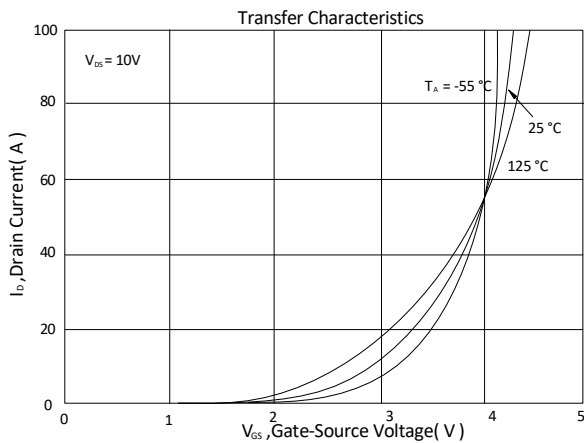
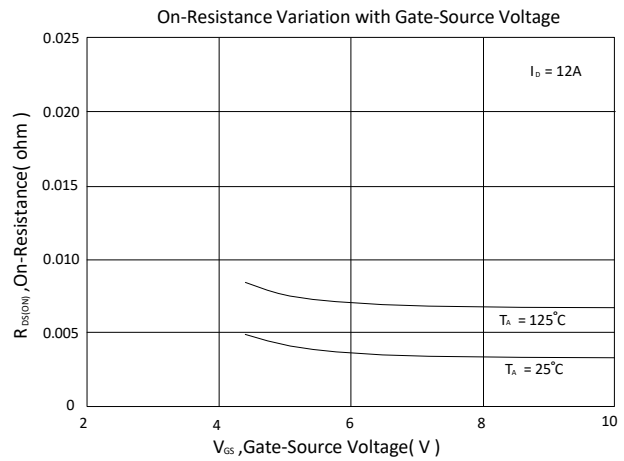
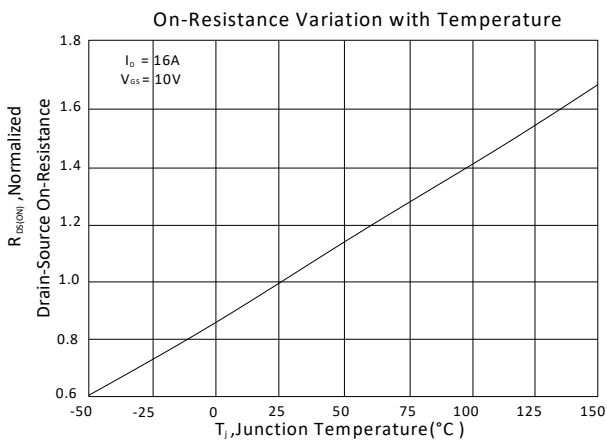
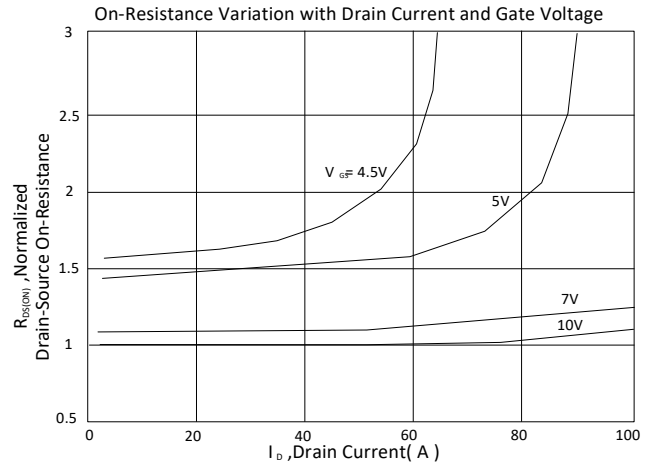
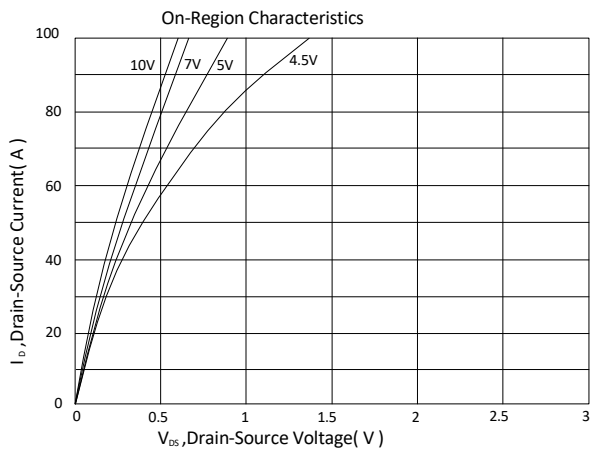
<sup>2</sup>Independent of operating temperature.

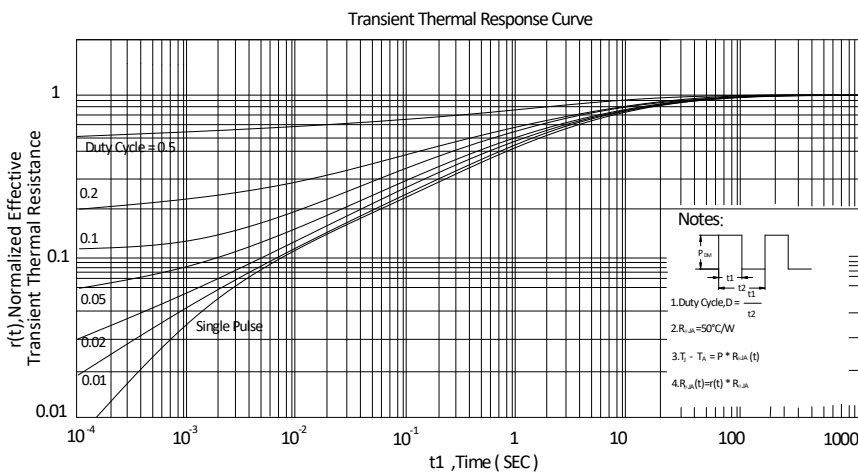
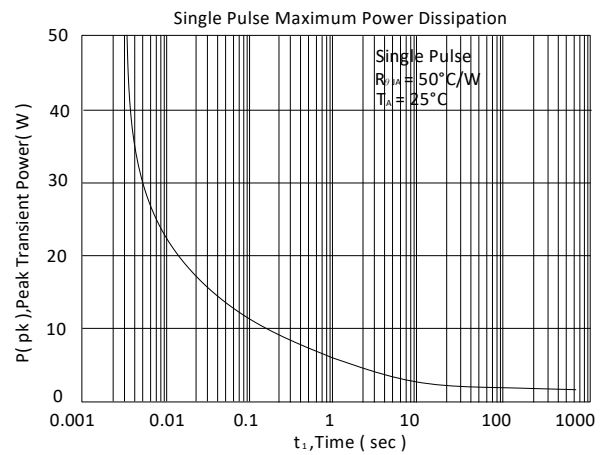
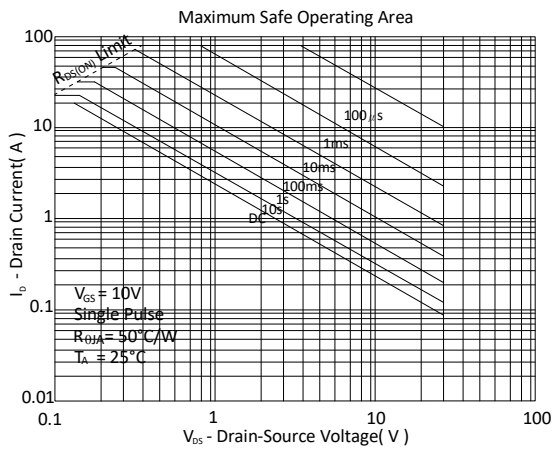
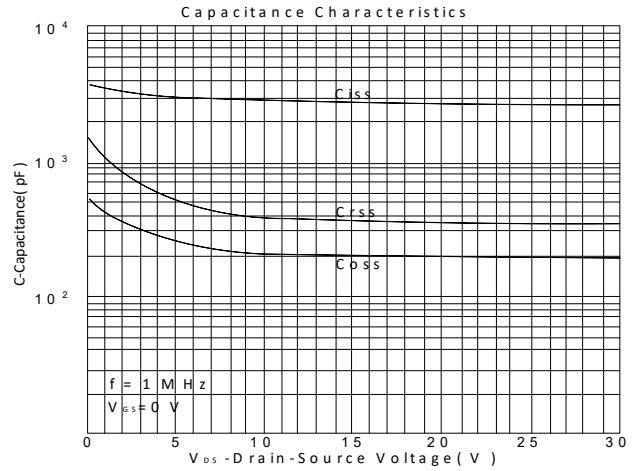
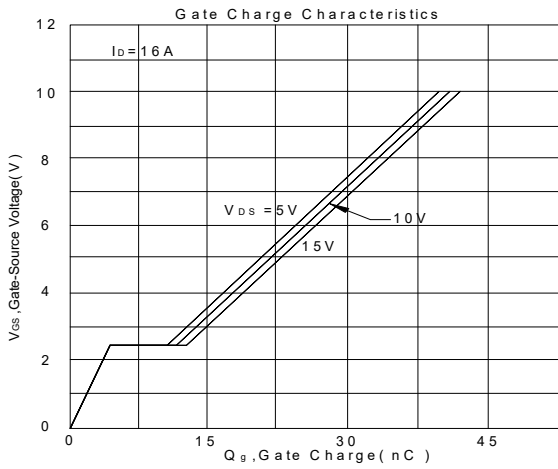
<sup>3</sup>Pulse width limited by maximum junction temperature.

EMC will review datasheet by quarter, and update new version.



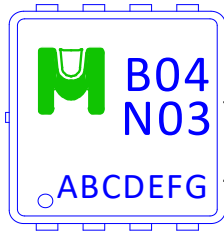
TYPICAL CHARACTERISTICS





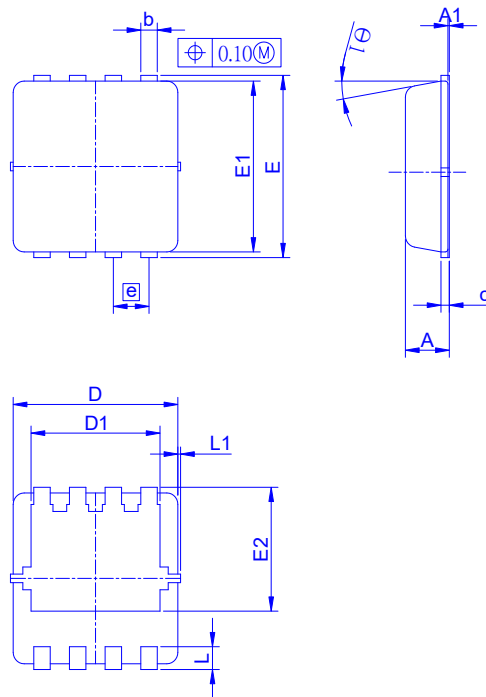
Ordering & Marking Information:

Device Name: EMB04N03V for EDFN3X3



- B04N03: Device Name
- ABCDEFG: Date Code
- A: Assembly House
- B: Year(A:2008 B:2009 C:2010....)
- C: Month(A:01 B:02 C:03 D:04 E:05 F:06 G:07 H:08 I:09 J:10 K:11 L:12)
- DEFG: Serial No.

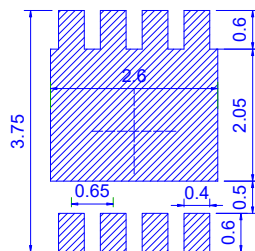
Outline Drawing



Dimension in mm

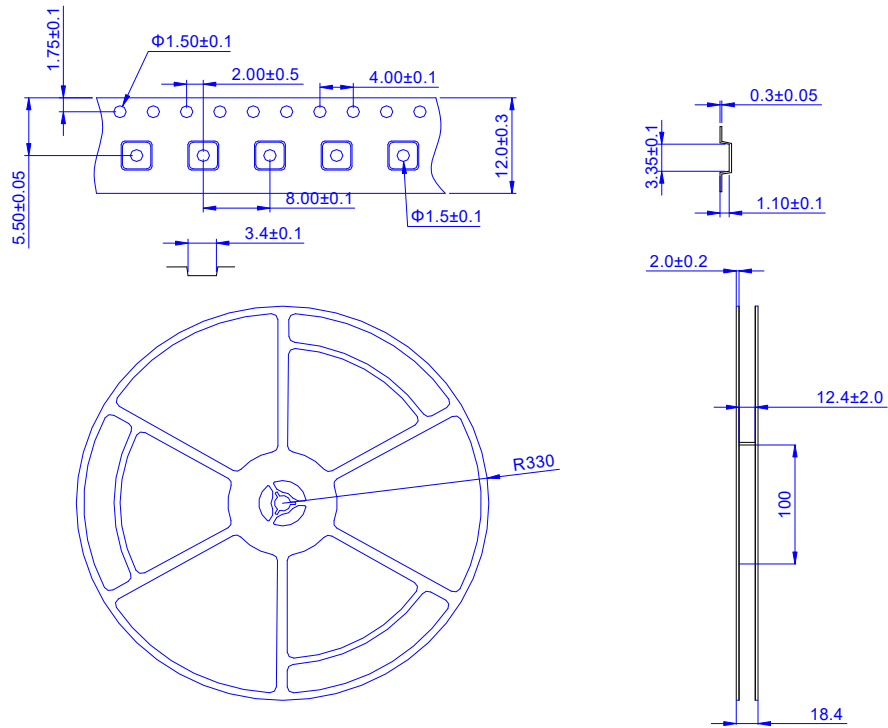
Dimension	A	A1	b	c	D	D1	E	E1	E2	e	L	L1	θ1
Min.	0.65	0	0.20	0.10	2.90	2.15	3.10	2.90	1.53	0.55	0.25	-	0°
Typ.	0.75	-	0.30	0.15	3.00	2.45	3.20	3.00	1.97	0.65	0.40	0.075	10°
Max.	0.90	0.05	0.40	0.25	3.30	2.74	3.50	3.30	2.59	0.75	0.60	0.150	14°

Recommended minimum pads





Tape&Reel Information: 5000pcs/Reel



產品別	EDFN3X3
Reel 尺寸	13"
編帶方式	<p>FEEED DIRECTION</p>
前空格	50
後空格	50
裝箱數	
滿捲數量	5K
捲/內盒比	1 : 1
內盒滿箱數	5K
內/外箱比	10 : 1
外箱滿箱數	50K