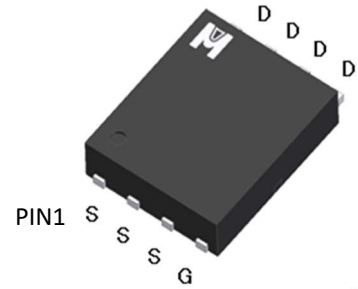
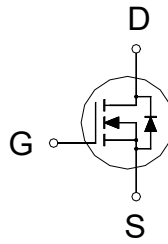


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

$BV_{DSS}$	30V
$R_{DS(on)}$ (MAX.)	3.0m $\Omega$
$I_D$	75A



N Channel MOSFET

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

Pb-Free Lead Plating & Halogen Free

ABSOLUTE MAXIMUM RATINGS (T<sub>c</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>	75	A
	T <sub>C</sub> = 100 °C		45	
	T <sub>A</sub> = 25 °C		22	
	T <sub>A</sub> = 70 °C		17	
Pulsed Drain Current <sup>1</sup>		I <sub>DM</sub>	160	
Avalanche Current		I <sub>AS</sub>	58	
Avalanche Energy	L = 0.1mH, I <sub>D</sub> =58A, R <sub>G</sub> =25 $\Omega$	E <sub>AS</sub>	168	mJ
Repetitive Avalanche Energy <sup>2</sup>	L = 0.05mH	E <sub>AR</sub>	84	
Power Dissipation	T <sub>C</sub> = 25 °C	P <sub>D</sub>	50	W
	T <sub>A</sub> = 25 °C		2.5	
	T <sub>C</sub> = 100 °C		20	
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>=40A, Rated V<sub>DS</sub>=30V N-CH

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	R <sub>θJC</sub>		2.5	°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>c</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	75			A
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 30A		2.5	3.0	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 24A		3.0	4.0	
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 24A		25		S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 15V, f = 1MHz		2979		pF
Output Capacitance	C <sub>oss</sub>			381		
Reverse Transfer Capacitance	C <sub>rss</sub>			224		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> = 15mV, V <sub>DS</sub> = 0V, f = 1MHz		1.6		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> = 30A		44.6		nC
	Q <sub>g</sub> (V <sub>GS</sub> =4.5V)			21.2		
Gate-Source Charge <sup>1,2</sup>	Q <sub>gs</sub>			8.3		
Gate-Drain Charge <sup>1,2</sup>	Q <sub>gd</sub>			6.5		
Turn-On Delay Time <sup>1,2</sup>	t <sub>d(on)</sub>		V <sub>DS</sub> = 15V, I <sub>D</sub> = 24A, V <sub>GS</sub> = 10V, R <sub>GS</sub> = 2.7Ω		15	
Rise Time <sup>1,2</sup>	t <sub>r</sub>			10		
Turn-Off Delay Time <sup>1,2</sup>	t <sub>d(off)</sub>			50		
Fall Time <sup>1,2</sup>	t <sub>f</sub>			10		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>c</sub> = 25 °C)</b>						
Continuous Current	I <sub>s</sub>				75	A
Pulsed Current <sup>3</sup>	I <sub>SM</sub>				150	
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = I <sub>s</sub> , 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		32		nS
Peak Reverse Recovery Current	I <sub>RM(REC)</sub>			200		A
Reverse Recovery Charge	Q <sub>rr</sub>			12		nC



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

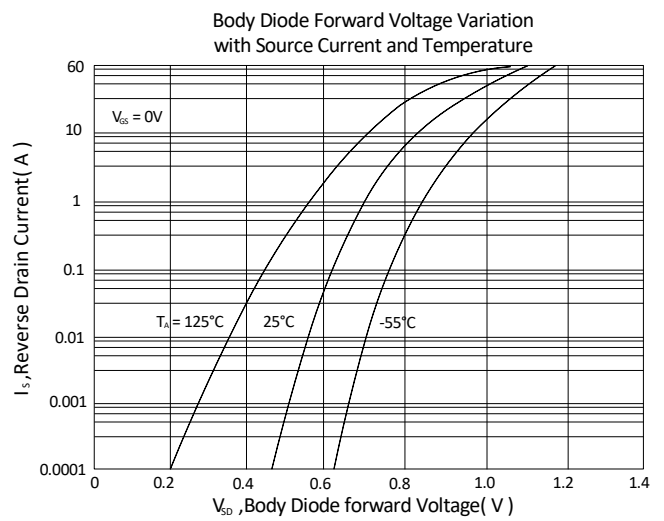
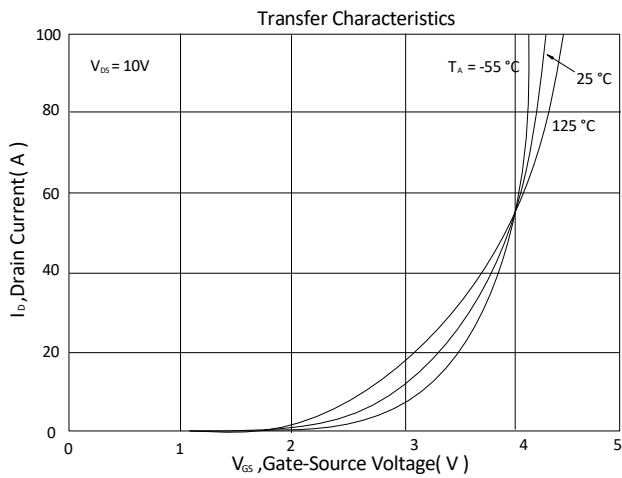
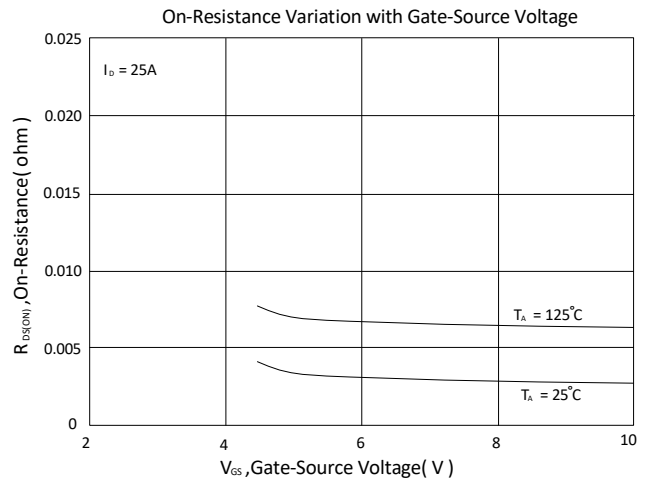
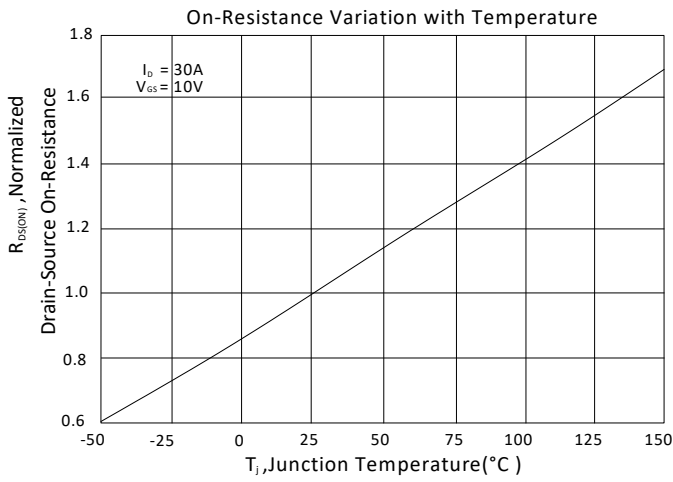
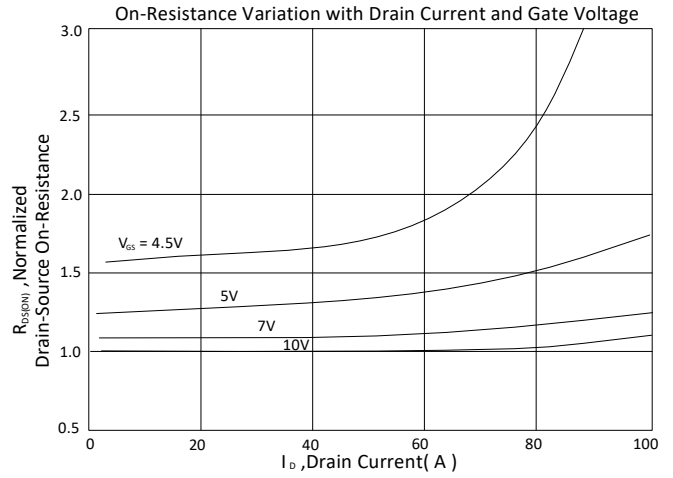
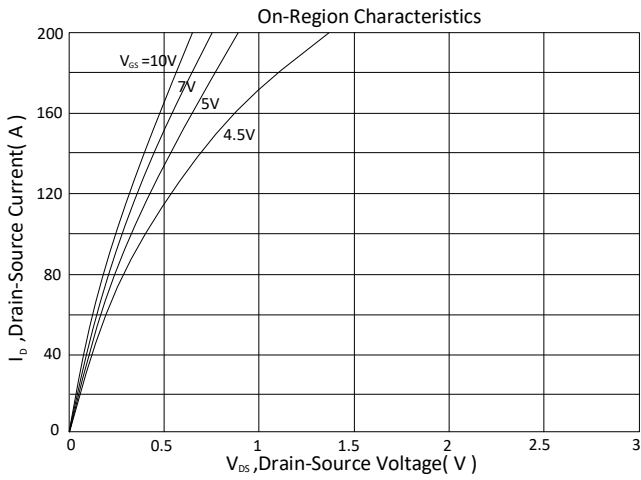
<sup>2</sup>Independent of operating temperature.

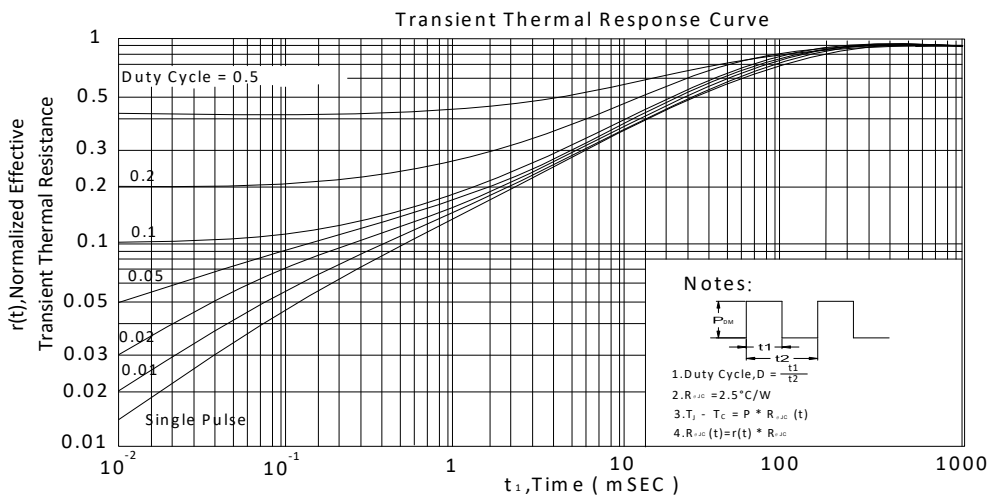
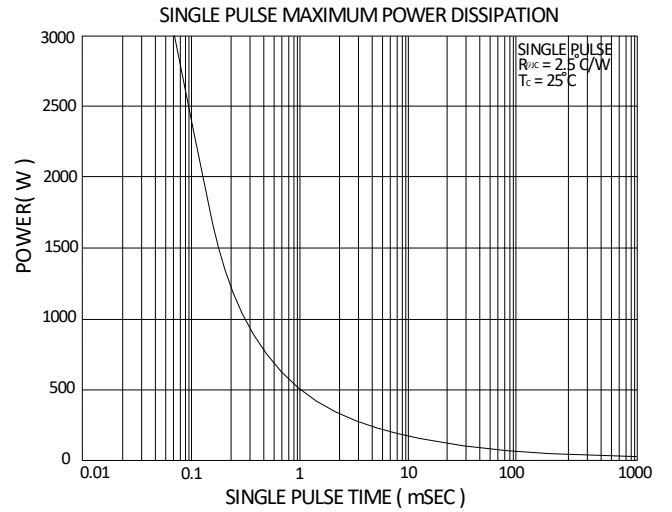
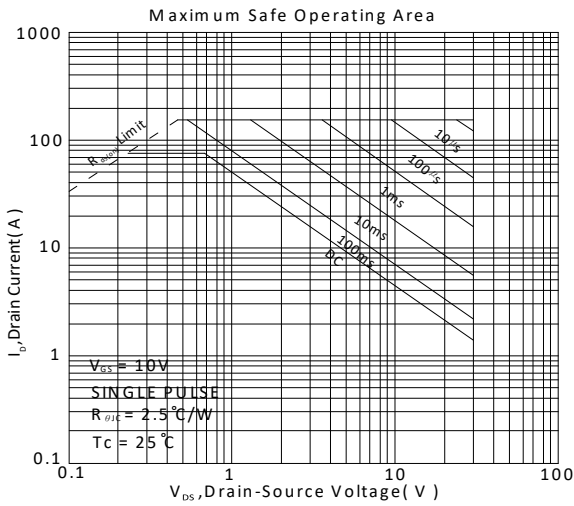
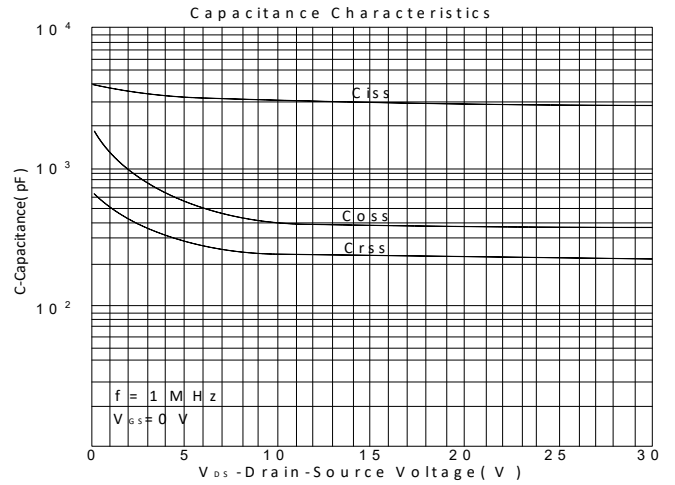
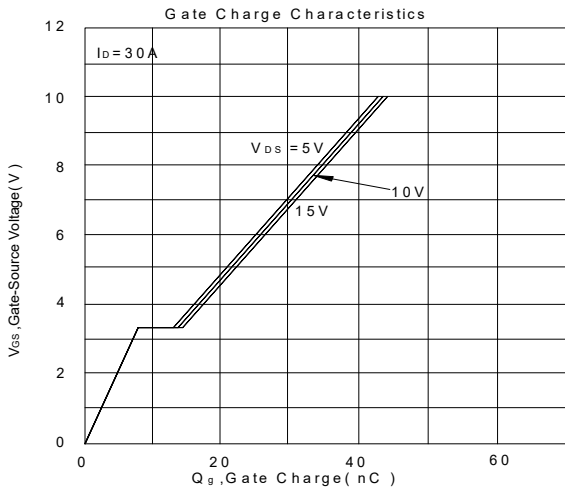
<sup>3</sup>Pulse width limited by maximum junction temperature.

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



TYPICAL CHARACTERISTICS





Ordering & Marking Information:

Device Name: EMB03N03HR for EDFN5X6



→ B03N03R: Device Name

→ ABCDEFG: Date Code

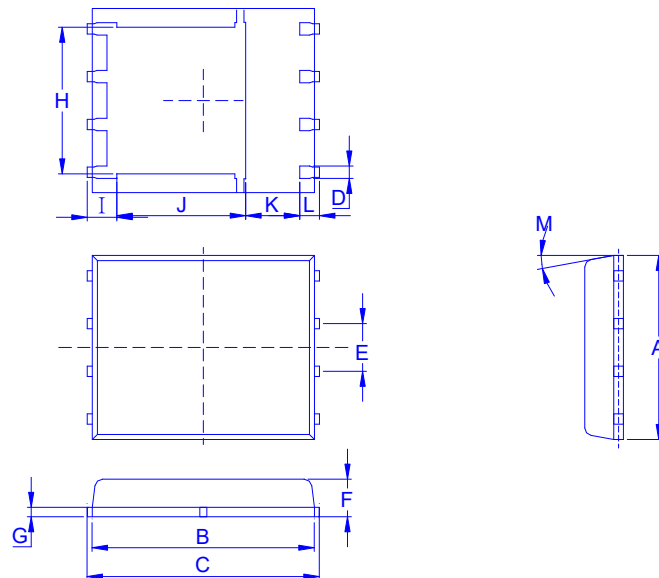
A: Assembly House

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.

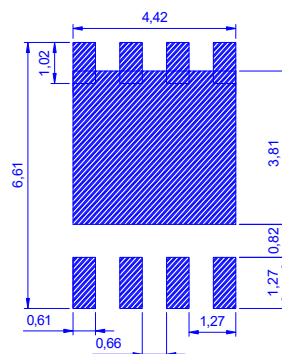
Outline Drawing



Dimension in mm

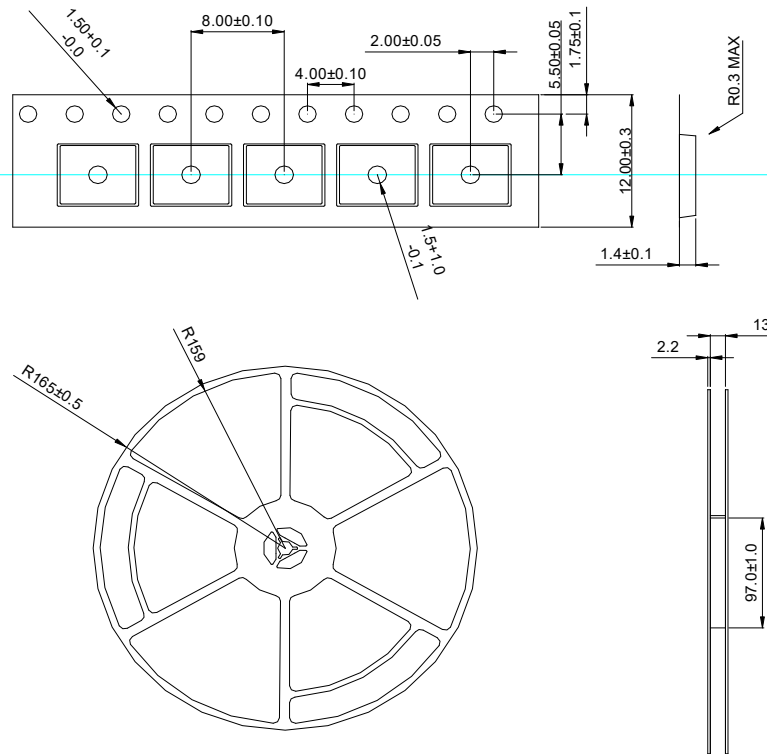
Dimension	A	B	C	D	E	F	G	H	I	J	K	L	M
Min	4.80	5.55	5.90	0.30	1.17	0.85	0.15	3.61	0.38	3.18	1.00	0.38	0°
Typ.	4.90	5.70	6.00	0.40	1.27	0.95	0.20	3.87	0.40	3.44	1.20	0.40	
Max	5.40	5.85	6.15	0.51	1.37	1.17	0.34	4.31	0.71	3.78	1.39	0.71	12°

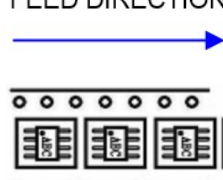
Recommended minimum pads





◆ Tape&Reel Information:2500pcs/Reel(Dimension in millimeter)



產品別	EDFN5X6
Reel 尺寸	13"
編帶方式	FEED DIRECTION 
前空格	25
後空格	50
裝箱數	
滿捲數量	2.5K
捲/內盒比	1 : 1
內盒滿箱數	2.5K
內/外箱比	10 : 1
外箱滿箱數	25K