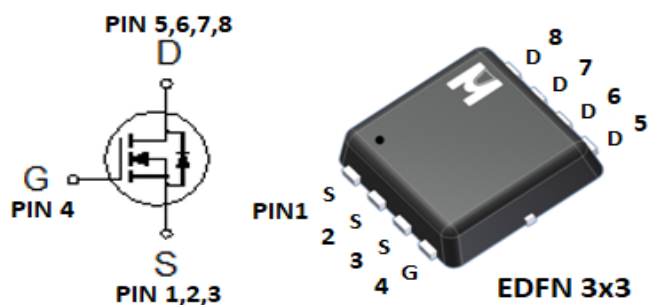


Single N-Channel Logic Level Enhancement Mode Field Effect Transistor

•Product Summary:

	N-CH
BVDSS	30V
$R_{DS(on)} (MAX.) @ V_{GS}=10V$	20.0m Ω
$R_{DS(on)} (MAX.) @ V_{GS}=4.5V$	30.0m Ω
$I_D @ T_C=25^{\circ}C$	22.0A
$I_D @ T_A=25^{\circ}C$	8.0A

• Pin Description:



Single N Channel MOSFET

UIS, Rg 100% Tested

Pb-Free Lead Plating & Halogen Free

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



PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C = 25^{\circ}C$	I_D	22	A
	$T_C = 100^{\circ}C$		14	
Continuous Drain Current	$T_A = 25^{\circ}C$	I_D	8.5	
	$T_A = 70^{\circ}C$		7	
Pulsed Drain Current ¹		I_{DM}	75	
Avalanche Current		I_{AS}	19	mJ
Avalanche Energy	$L = 0.1mH$	EAS	309	
Repetitive Avalanche Energy ²	$L = 0.05mH$	EAR	154	W
Power Dissipation	$T_C = 25^{\circ}C$	P_D	62.5	
	$T_C = 100^{\circ}C$		25	W
Power Dissipation	$T_A = 25^{\circ}C$	P_D	8	
	$T_A = 70^{\circ}C$		6	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^{\circ}C$

•THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		2	$^{\circ}C/W$
Junction-to-Ambient ³	$R_{\theta JA}$		60	

¹Pulse width limited by maximum junction temperature.

²Duty cycle < 1%

³60 $^{\circ}C$ / W when mounted on a 1 in² pad of 2 oz copper.

⁴Guarantee by Engineering test

▪ CH-1_ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage ⁴	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250uA	30			V
Gate Threshold Voltage ⁴	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1.2	1.6	2.5	
Gate-Body Leakage ⁴	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current ⁴	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			1	uA
		V _{DS} =20V, V _{GS} =0V, T _J = 125 °C			25	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 10V, V _{GS} = 10V	22			A
Drain-Source On-State Resistance ^{1,4}	R _{DS(ON)}	V _{GS} = 10V, I _D = 8A		15.5	20	mΩ
		V _{GS} = 4.5V, I _D = 6A		25	30	
DYNAMIC						
Input Capacitance ⁵	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz		520		pF
Output Capacitance ⁵	C _{oss}			88		
Reverse Transfer Capacitance ⁵	C _{rss}			62		
Gate Resistance ^{4,5}	R _g	f = 1MHz		2		Ω
Total Gate Charge ^{1,2,5}	Q _g (V _{GS} =10V)	V _{DS} = 15V, V _{GS} = 10V, I _D = 8A		11.5		nC
	Q _g (V _{GS} =4.5V)			5		
Gate-Source Charge ^{1,2,5}	Q _{gs}			1.6		
Gate-Drain Charge ^{1,2,5}	Q _{gd}			2.8		
Turn-On Delay Time ^{1,2,5}	t _{d(on)}	V _{DS} = 15V, V _{GS} = 10V, I _D = 1A , R _g = 6Ω		5		nS
Rise Time ^{1,2,5}	t _r			3		
Turn-Off Delay Time ^{1,2,5}	t _{d(off)}			15		
Fall Time ^{1,2,5}	t _f			11		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Current	I _S				22	A
Pulsed Current ³	I _{SM}				75	
Forward Voltage ^{1,4}	V _{SD}	I _F = I _S , V _{GS} = 0V			1.2	V
Reverse Recovery Time ⁵	t _{rr}	IF=20A, dIF/dt = 400A / mS		8.2		nS
Reverse Recovery Charge ⁵	Q _{rr}			10.5		nC

¹ Pulse test : Pulse Width ≤ 300 usec, Duty Cycle ≤ 2%.

² Independent of operating temperature.

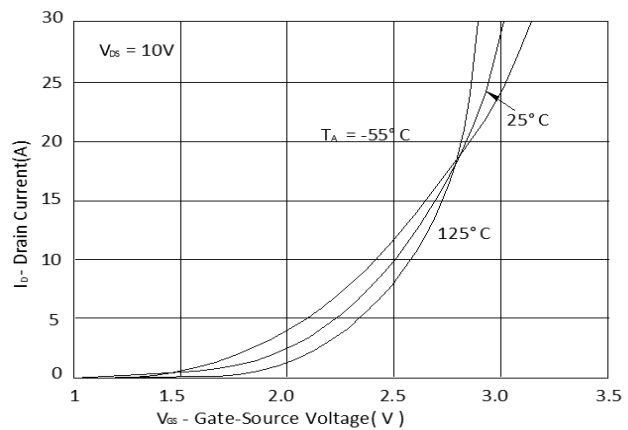
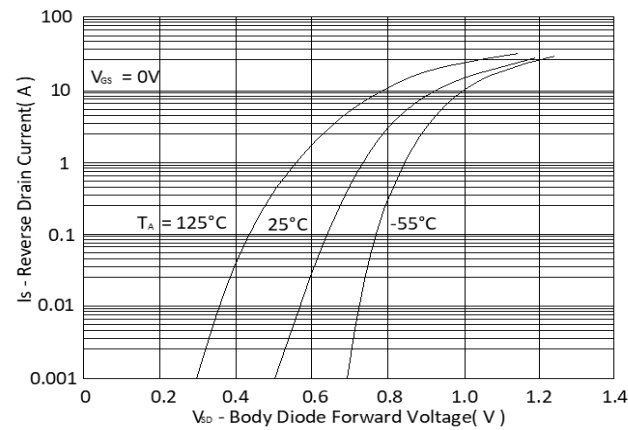
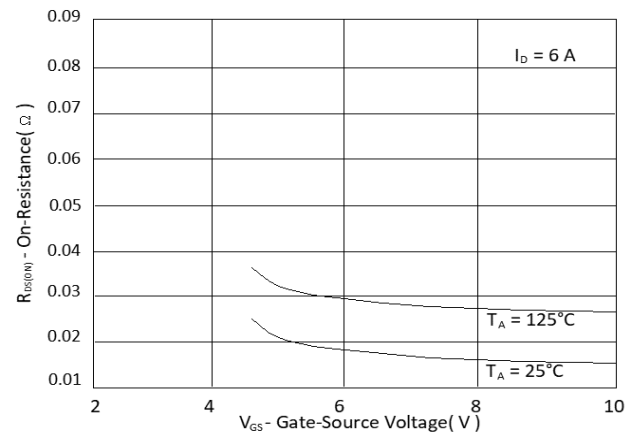
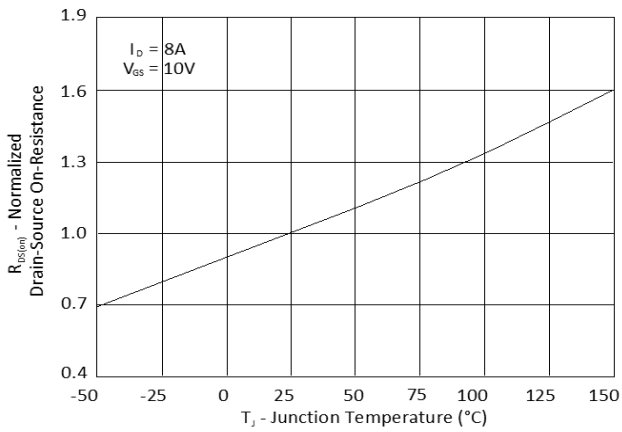
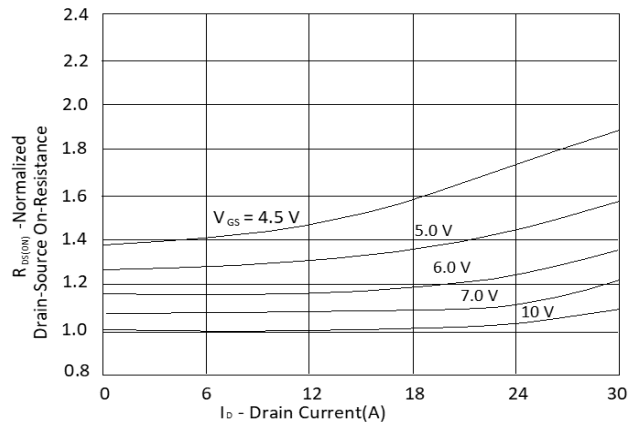
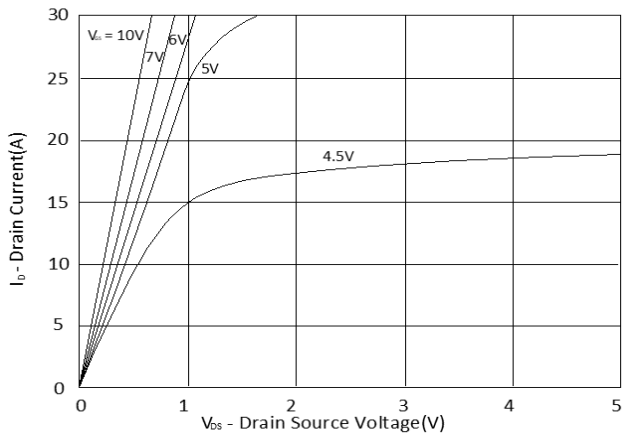
³ Pulse width limited by maximum junction temperature.

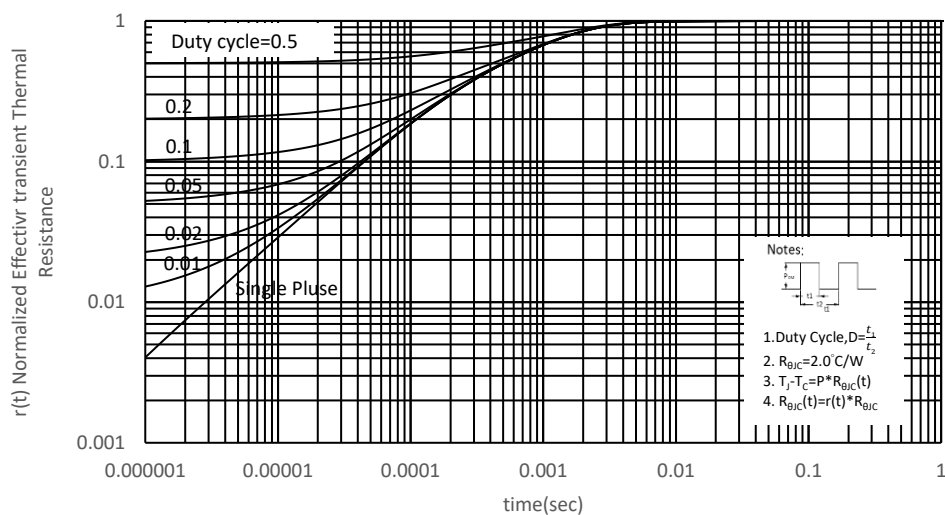
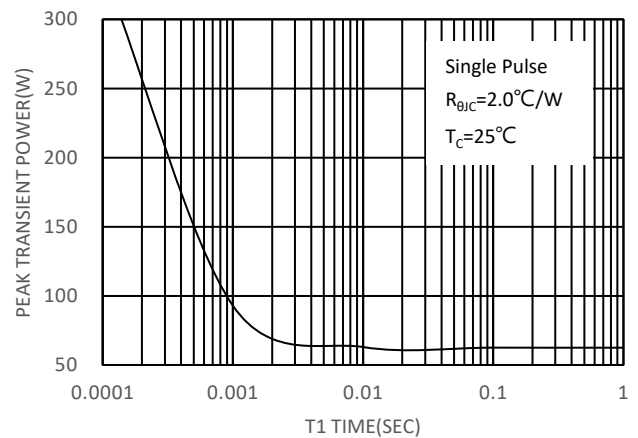
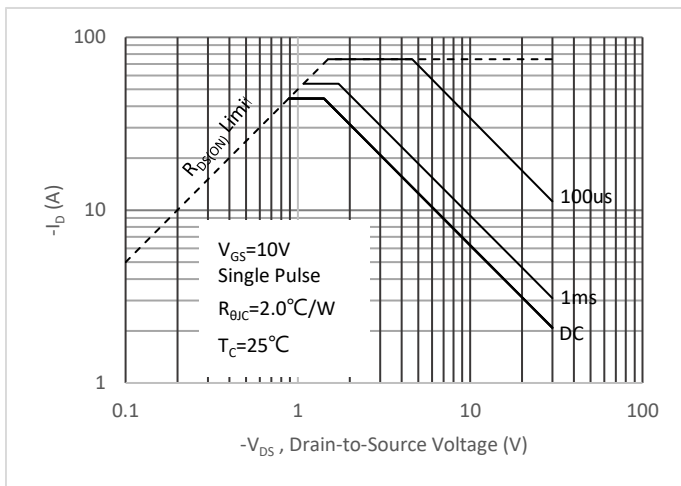
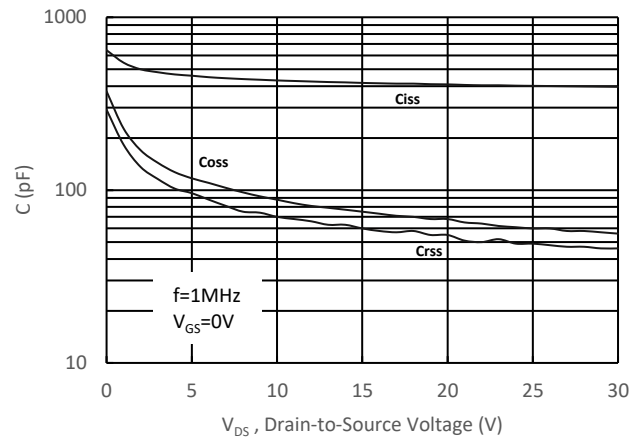
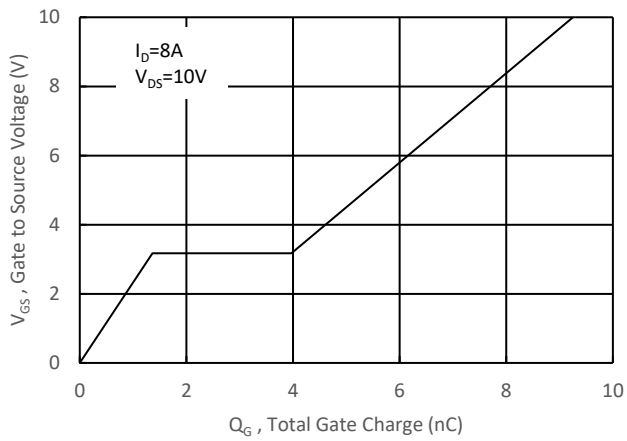
⁴ Guarantee by FT test Item

⁵ Guarantee by Engineering test

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

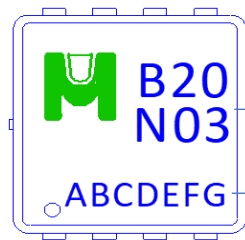
▪ TYPICAL CHARACTERISTICS





Ordering & Marking Information:

Device Name: EMB20N03V for EDFN 3x3



B20N03: Device Name

ABCDEFGH: Date Code

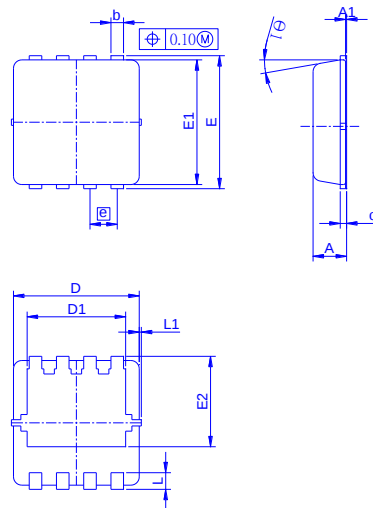
A: Assembly House

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)

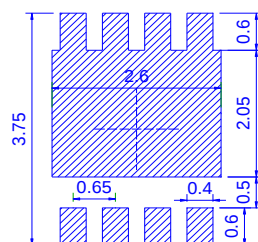
DEFG: Serial No.

Outline Drawing

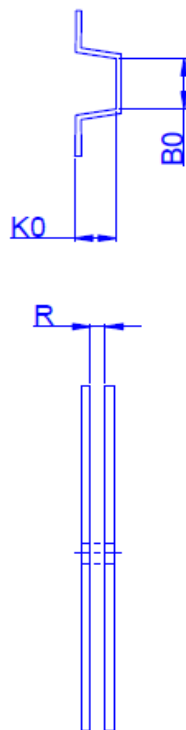
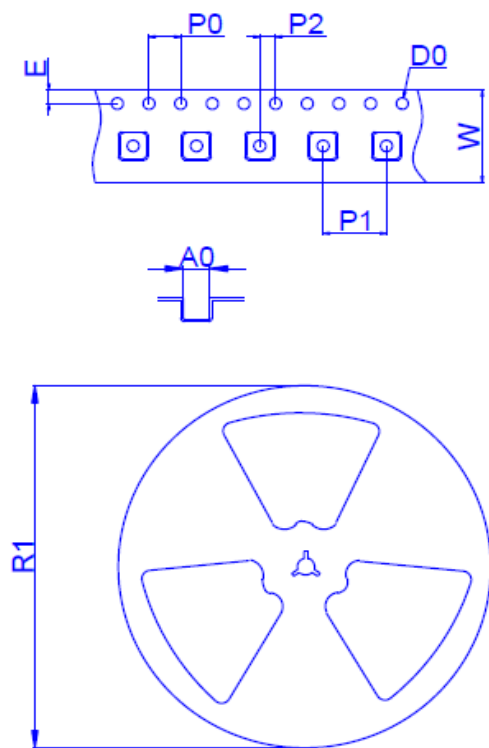


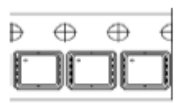
Dimension	A	A1	b	c	D	D1	E	E1	E2	e	L	L1	θ1
Min.	0.65	0	0.2	0.1	2.9	2.15	3.1	2.9	1.53	0.55	0.25	-	0°
Typ.	0.75	-	0.3	0.15	3	2.45	3.2	3	1.97	0.65	0.4	0.075	10°
Max.	0.9	0.05	0.4	0.25	3.3	2.74	3.5	3.3	2.59	0.75	0.6	0.15	14°

Footprint



◆ Tape&Reel Information:5000pcs/Reel



產品別	EDFN3X3
Reel 尺寸	13"
編帶方式	FEED DIRECTION → 

Dimension in mm

Dimension	Carrier tape									Reel	
	A0	B0	D0	E	K0	P0	P1	P2	W	R	R1
Typ.	3.6	3.5	1.55	1.7	1.2	4	8	2	12	14	330
±	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	1	2	2