

P-Channel Logic Level Enhancement Mode Field Effect Transistor

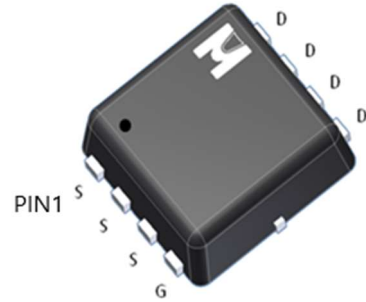
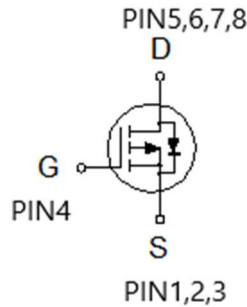
Product Summary:

BV_{DSS}	-30V
$R_{DS(on)}$ (MAX.)	20m Ω
I_D	-18A

P-Channel MOSFET

UIS, Rg 100% Tested

Pb-Free Lead Plating & Halogen Free



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 25	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	I_D	-18	A
	$T_A = 25\text{ }^\circ\text{C}$		-9	
	$T_C = 100\text{ }^\circ\text{C}$		-13	
Pulsed Drain Current ¹		I_{DM}	-72	
Avalanche Current		I_{AS}	-30	
Avalanche Energy	$L = 0.1\text{mH}$, $I_{AS} = -30\text{A}$, $R_G = 25\Omega$	E_{AS}	45	mJ
Repetitive Avalanche Energy ²	$L = 0.05\text{mH}$	E_{AR}	22.5	
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	21	W
	$T_C = 100\text{ }^\circ\text{C}$		8.3	
Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	P_D	2.5	W
	$T_A = 100\text{ }^\circ\text{C}$		1	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^\circ\text{C}$

100% UIS testing in condition of $V_D = -20\text{V}$, $L = 0.1\text{mH}$, $V_G = -10\text{V}$, $I_L = -20\text{A}$, Rated $V_{DS} = -30\text{V}$ P-CH

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		6	$^\circ\text{C} / \text{W}$
Junction-to-Ambient ³	$R_{\theta JA}$		50	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$



³50°C / W when mounted on a 1 in² pad of 2 oz copper.

ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1	-1.5	-3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
		V _{DS} = 0V, V _{GS} = ±25V			±500	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24V, V _{GS} = 0V			-1	μA
		V _{DS} = -20V, V _{GS} = 0V, T _J = 125 °C			-10	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = -5V, V _{GS} = -10V	-18			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = -10V, I _D = -10A		17.5	20	mΩ
		V _{GS} = -4.5V, I _D = -7A		26	35	
Forward Transconductance ¹	g _{fs}	V _{DS} = -5V, I _D = -10A		24		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -15V, f = 1MHz		1407		pF
Output Capacitance	C _{oss}			208		
Reverse Transfer Capacitance	C _{rss}			164		
Gate Resistance	R _g	V _{GS} = 15mV, V _{DS} = 0V, f = 1MHz		4.5		Ω
Total Gate Charge ^{1,2}	Q _g (V _{GS} =10V)	V _{DS} = -15V, V _{GS} = -10V, I _D = -10A		20.3		nC
	Q _g (V _{GS} =4.5V)			9.8		
Gate-Source Charge ^{1,2}	Q _{gs}			3.2		
Gate-Drain Charge ^{1,2}	Q _{gd}			4.9		
Turn-On Delay Time ^{1,2}	t _{d(on)}		V _{DS} = -15V, I _D = -1A, V _{GS} = -10V, R _{GS} = 2.7Ω		10	
Rise Time ^{1,2}	t _r			8		
Turn-Off Delay Time ^{1,2}	t _{d(off)}			25		
Fall Time ^{1,2}	t _f			6		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I _S				-18	A
Pulsed Current ³	I _{SM}				-72	
Forward Voltage ¹	V _{SD}	I _F = -10 A, V _{GS} = 0V			-1.2	V
Reverse Recovery Time	t _{rr}	I _F = I _S , dI _F /dt = 100A / μS		32		nS
Reverse Recovery Charge	Q _{rr}			26		nC



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Excelliance MOS Corporation

EMB20P03V

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

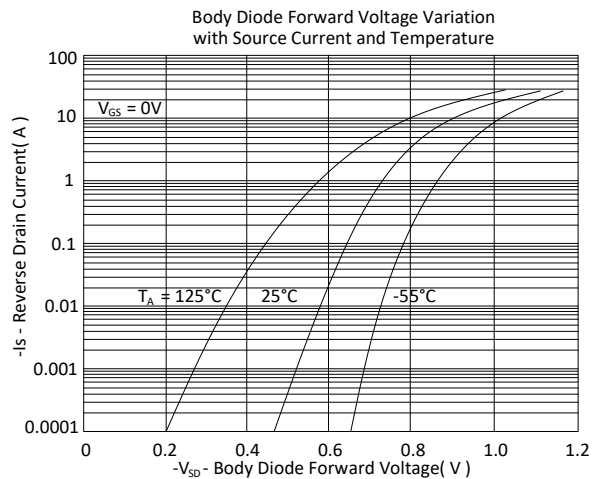
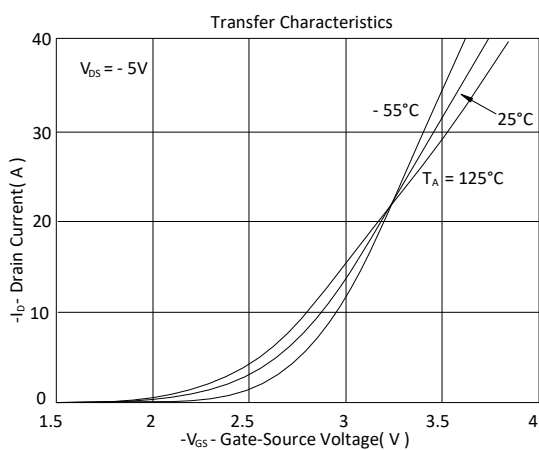
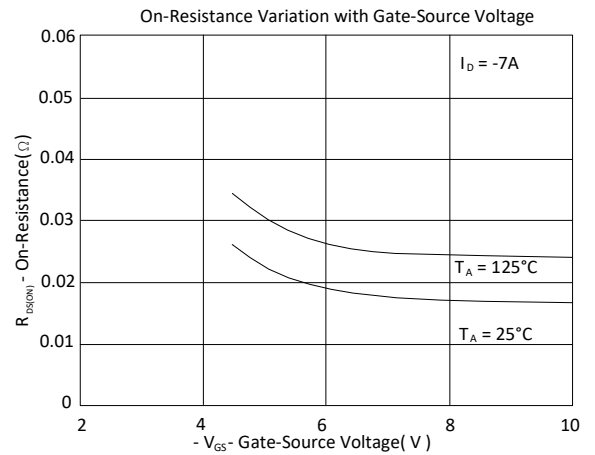
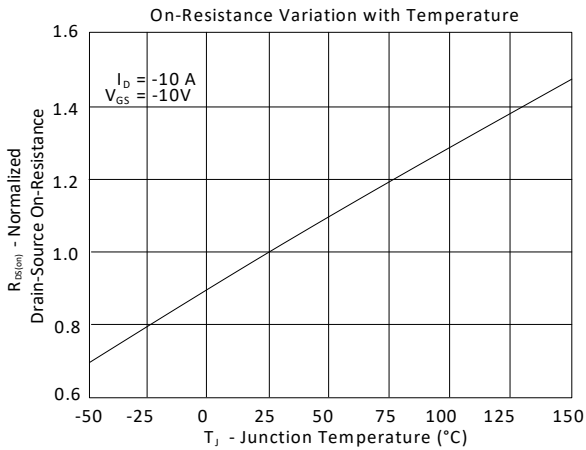
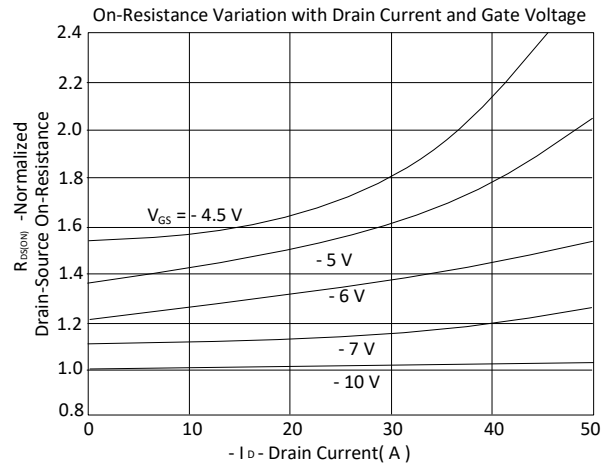
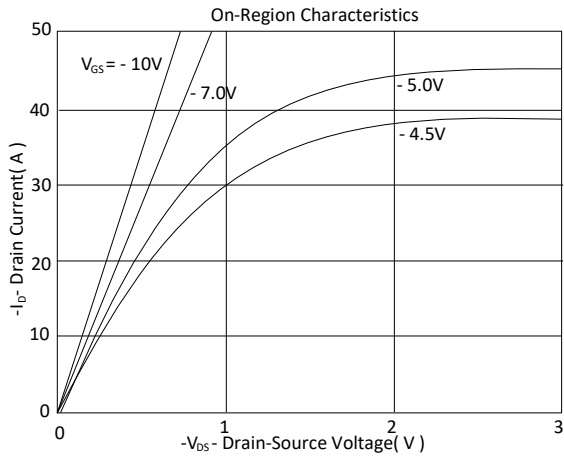
²Independent of operating temperature.

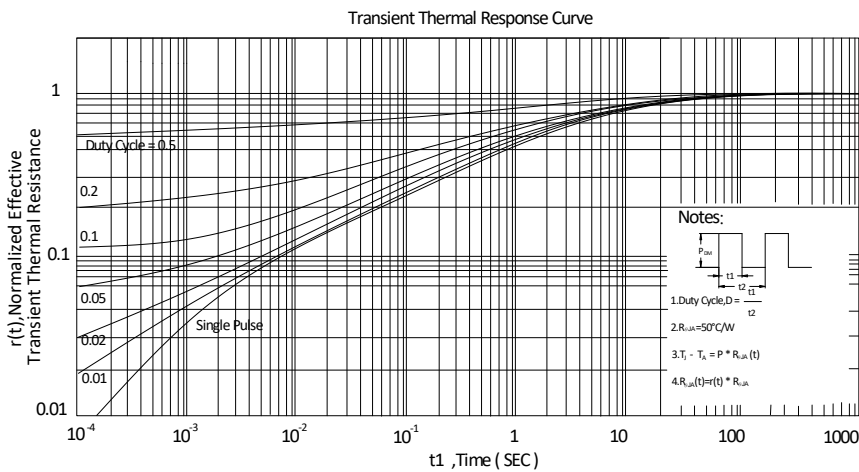
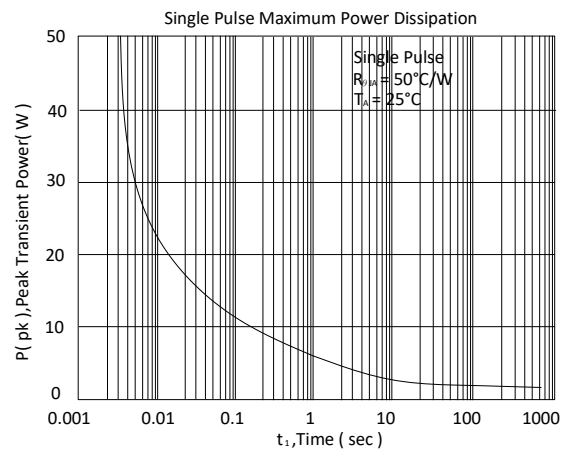
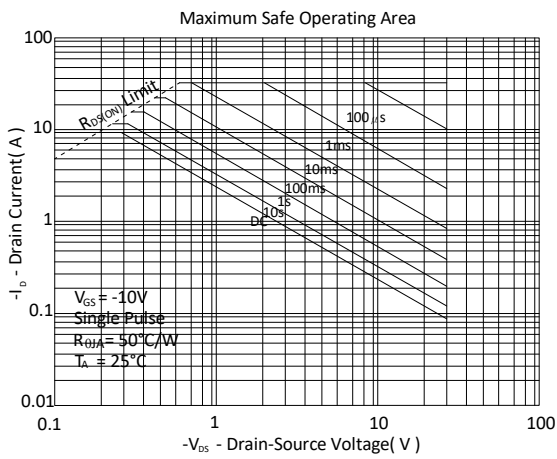
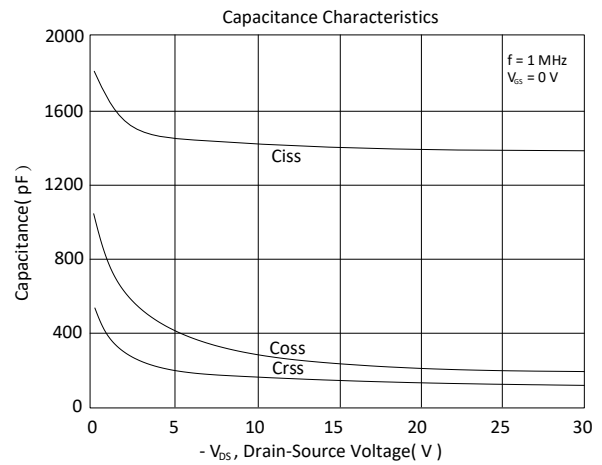
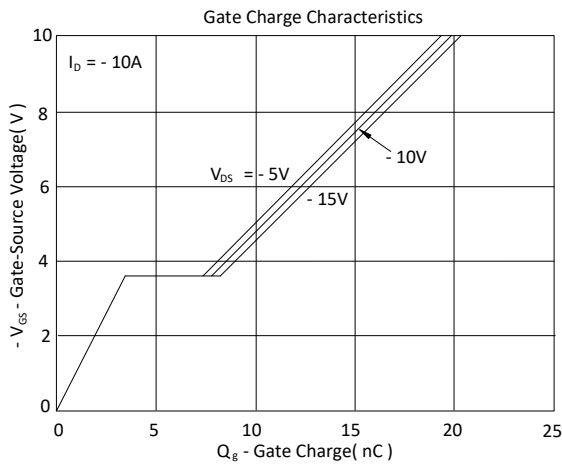
³Pulse width limited by maximum junction temperature.

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



TYPICAL CHARACTERISTICS





Ordering & Marking Information:

Device Name: EMB20P03V for EDFN3X3



B20P03: Device Name

ABCDEFGH: Date Code

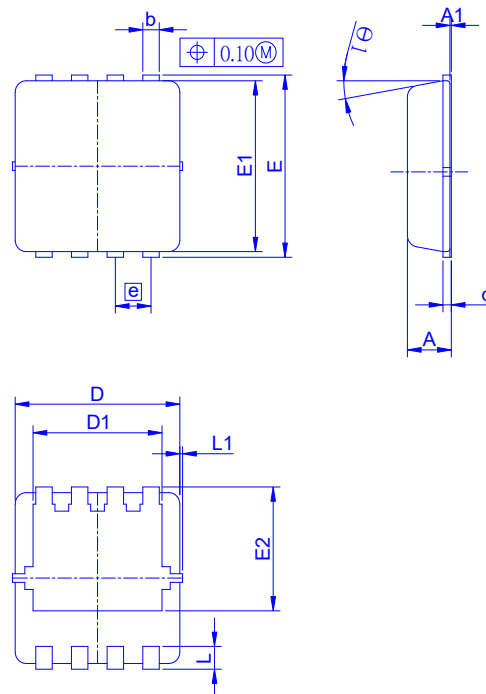
A: Assembly House

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.

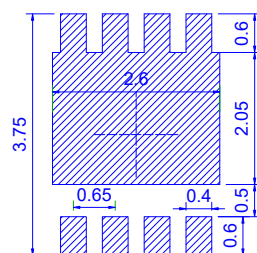
Outline Drawing



Dimension in mm

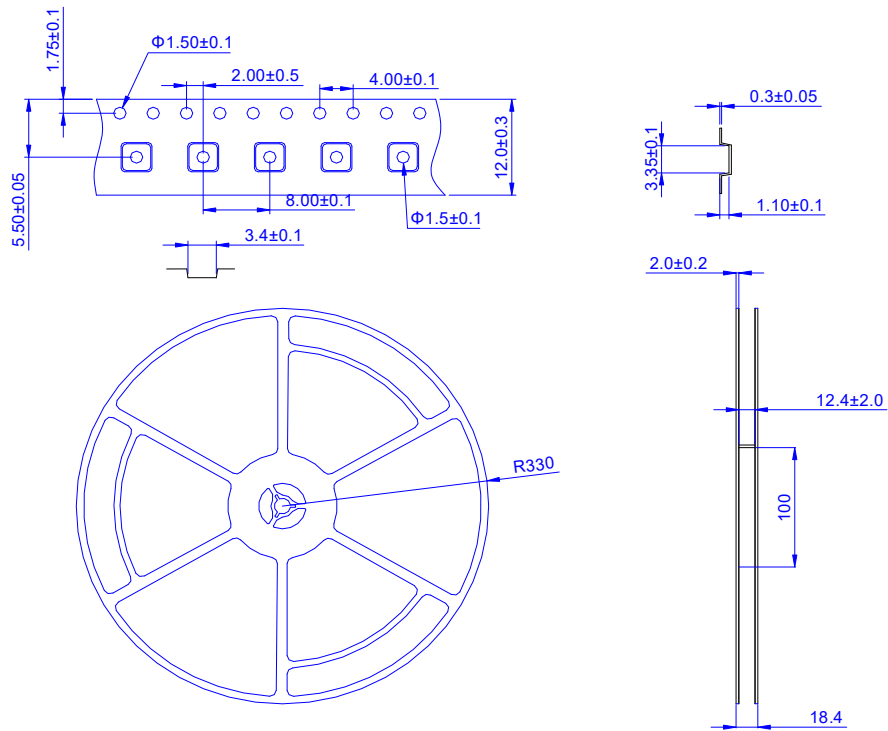
Dimension	A	A1	b	c	D	D1	E	E1	E2	e	L	L1	θ
Min.	0.65	0	0.20	0.10	2.90	2.15	3.10	2.90	1.53	0.55	0.25	-	0°
Typ.	0.75	-	0.30	0.15	3.00	2.45	3.20	3.00	1.97	0.65	0.40	0.075	10°
Max.	0.90	0.05	0.40	0.25	3.30	2.74	3.50	3.30	2.59	0.75	0.60	0.150	14°

Recommended minimum pads





Tape&Reel Information: 5000pcs/Reel



產品別	EDFN3X3
Reel 尺寸	13"
編帶方式	<p>FEED 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