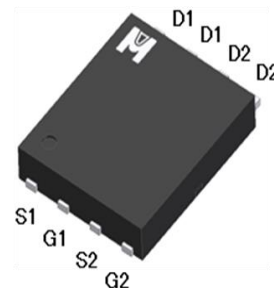
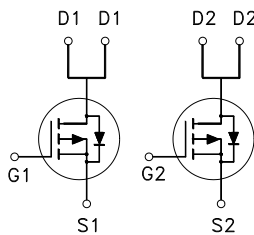


Dual P-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	-30V
$R_{DS(on)} (MAX.)$	13.5m Ω
I_D	-20A



UIS, Rg 100% Tested

RoHS & Halogen Free & TSCA Compliant

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



PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C = 25\text{ }^{\circ}\text{C}$	I_D	-20	A
	$T_A = 25\text{ }^{\circ}\text{C} (t \leq 10s)$		-10	
	$T_A = 25\text{ }^{\circ}\text{C} (\text{Steady-State})$		-8	
	$T_C = 100\text{ }^{\circ}\text{C}$		-14	
Pulsed Drain Current ¹		I_{DM}	-80	
Avalanche Current		I_{AS}	-20	
Avalanche Energy	$L = 0.1\text{mH}, I_{AS} = -20\text{A}, R_G = 25\text{ }\Omega$	E_{AS}	20	mJ
Repetitive Avalanche Energy ²	$L = 0.05\text{mH}$	E_{AR}	10	
Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	20.8	W
	$T_C = 100\text{ }^{\circ}\text{C}$		8.3	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^{\circ}\text{C}$

100% UIS testing in condition of $V_D = -25\text{V}, L = 0.1\text{mH}, V_G = -10\text{V}, I_L = -12\text{A}$, Rated $V_{DS} = -30\text{V}$ P-CH

100% UIS testing in condition of $V_D = -25\text{V}, L = 0.1\text{mH}, V_G = -10\text{V}, I_L = -12\text{A}$, 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	$t \leq 10s$	$R_{\theta JA}$		45	
Junction-to-Ambient ³	Steady-State	$R_{\theta JA}$		80	



¹Pulse width limited by maximum junction temperature.

²Duty cycle < 1%

³The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz.

Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

⁴Guarantee by Engineering test

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	-3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
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	-20			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = -10V, I _D = -20A		11.7	13.5	mΩ
		V _{GS} = -4.5V, I _D = -10A		15	20	
Forward Transconductance ¹	g _{fs}	V _{DS} = -5V, I _D = -15A		24		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -15V, f = 1MHz		2360		pF
Output Capacitance	C _{oss}			385		
Reverse Transfer Capacitance	C _{rss}			325		
Gate Resistance	R _g	V _{GS} = 15mV, V _{DS} = 0V, f = 1MHz		3.0		Ω
Total Gate Charge ^{1,2}	Q _g	V _{DS} = -15V, V _{GS} = -10V, I _D = -20A		45		nC
Gate-Source Charge ^{1,2}	Q _{gs}			5.6		
Gate-Drain Charge ^{1,2}	Q _{gd}			8.5		
Turn-On Delay Time ^{1,2}	t _{d(on)}	V _{DS} = -15V, I _D = -5A, V _{GS} = -10V, R _G = 3Ω		15		nS
Rise Time ^{1,2}	t _r			12		
Turn-Off Delay Time ^{1,2}	t _{d(off)}			35		
Fall Time ^{1,2}	t _f			10		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _c = 25 °C)						
Continuous Current	I _S				-20	A
Pulsed Current ³	I _{SM}				-80	
Forward Voltage ¹	V _{SD}	I _F = -20A, 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

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

²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.



Ordering & Marking Information:

Device Name: EMB12B03H for EDFN 5 x 6



→ B12B03: Device Name

→ ABCDEFG: Date Code

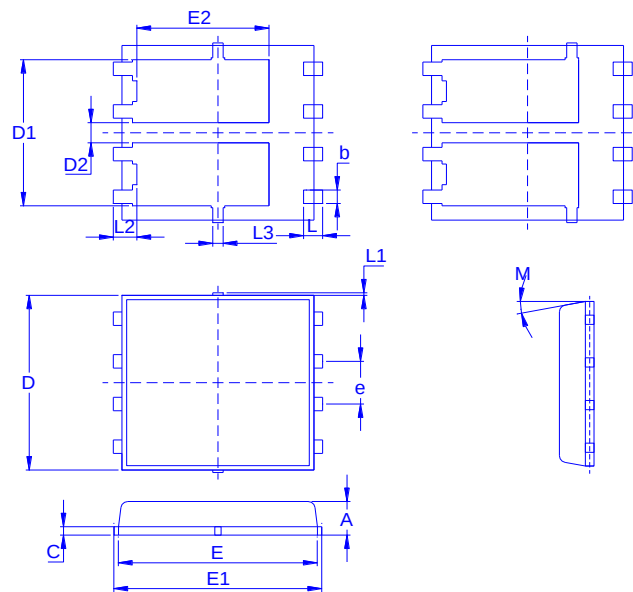
A: Assembly House

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.

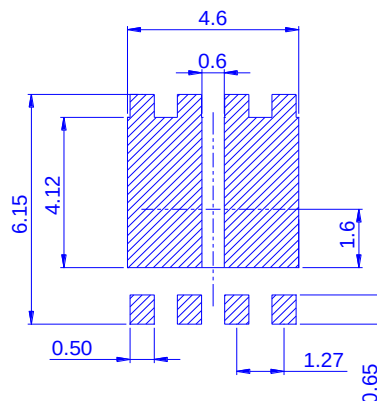
Outline Drawing

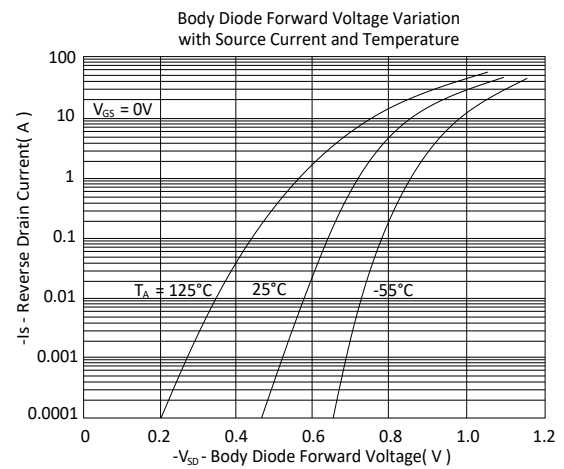
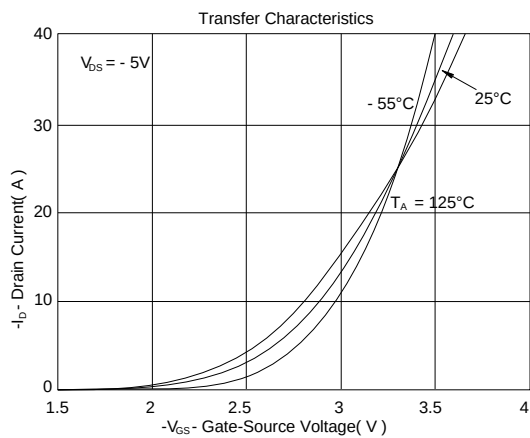
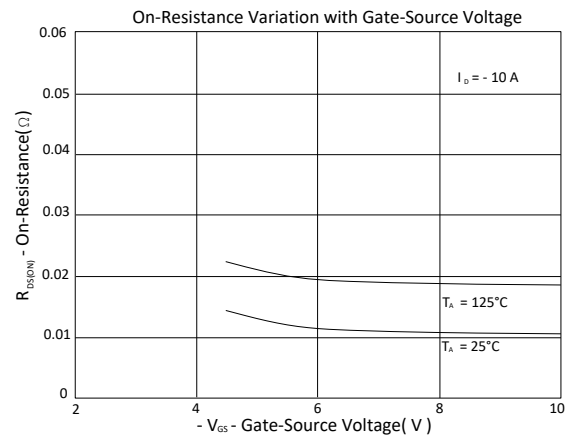
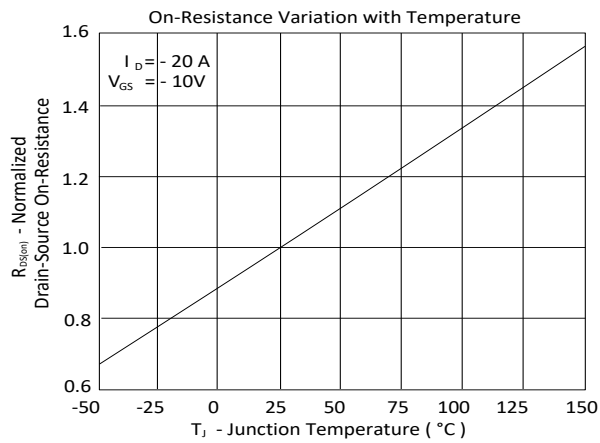
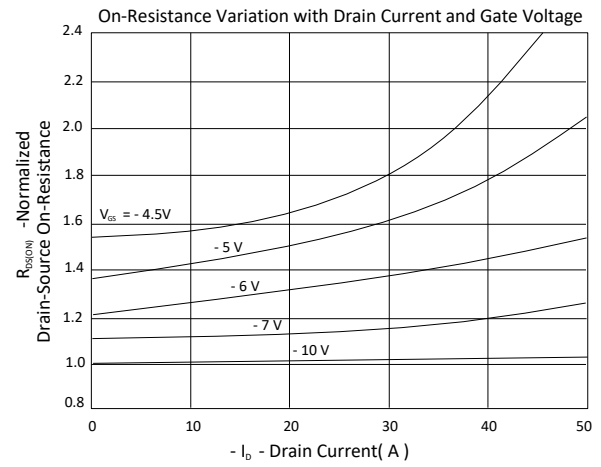
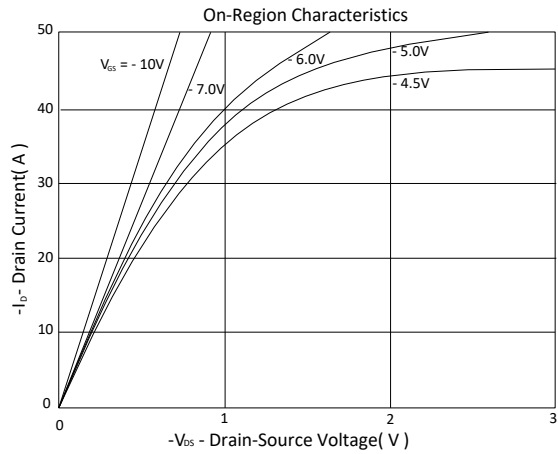


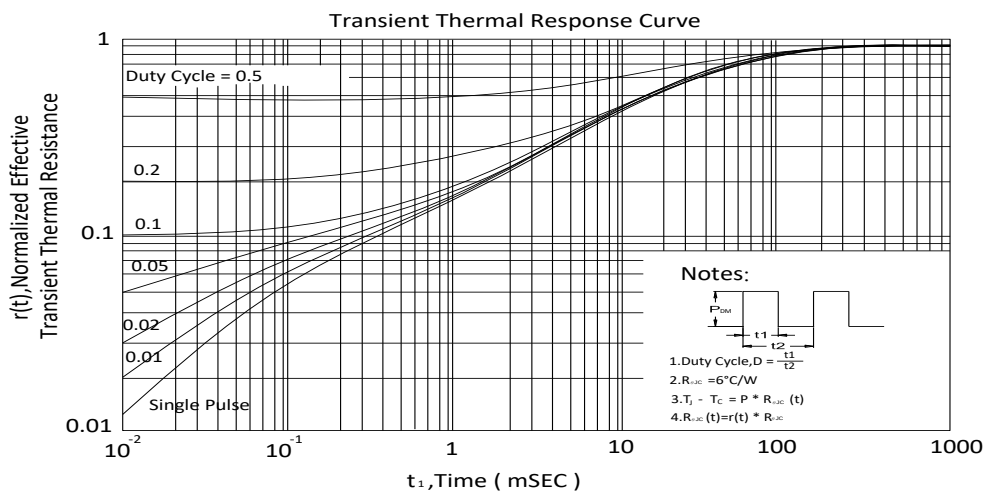
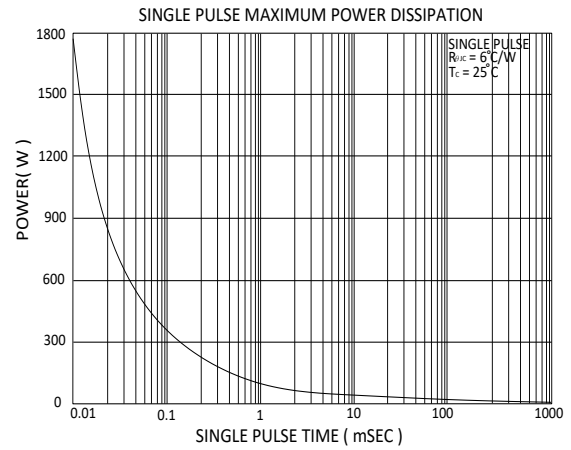
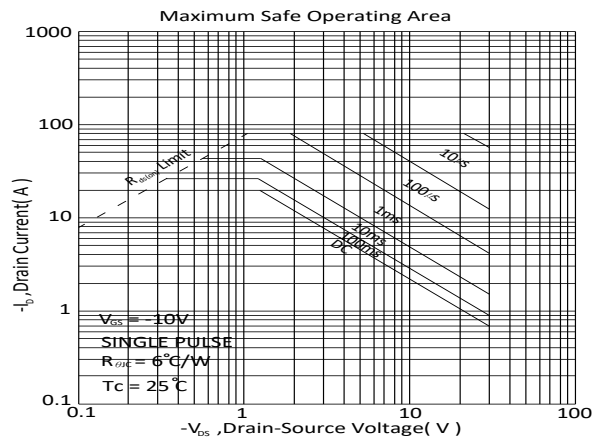
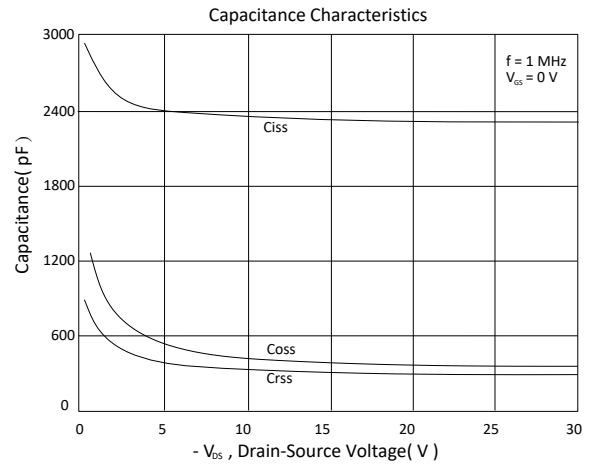
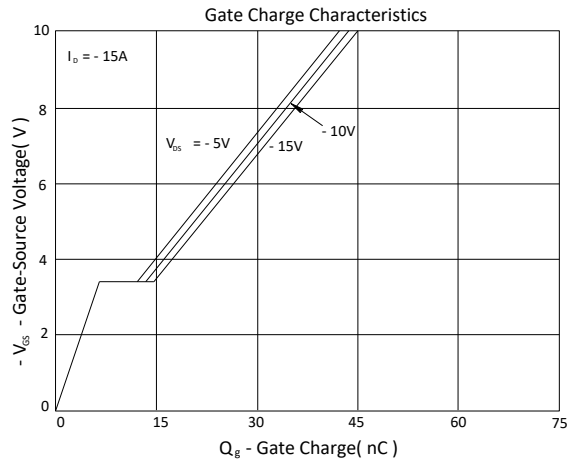
Dimension in mm

Dimension	A	b	c	D	D1	D2	E	E1	E2	e	L	L1	L2	M
Min.	0.85	0.3	0.15	4.8	3.41	0.47	5.65	5.95	3.30		0.38	0	0.38	0°
Typ.	1.01	0.4	0.2	5	4.01	0.67	5.75	6.05	3.43	1.27	0.55	0.09	0.48	
Max.	1.17	0.5	0.25	5.2	4.61	0.87	5.85	6.15	3.58		0.71	0.18	0.58	12°

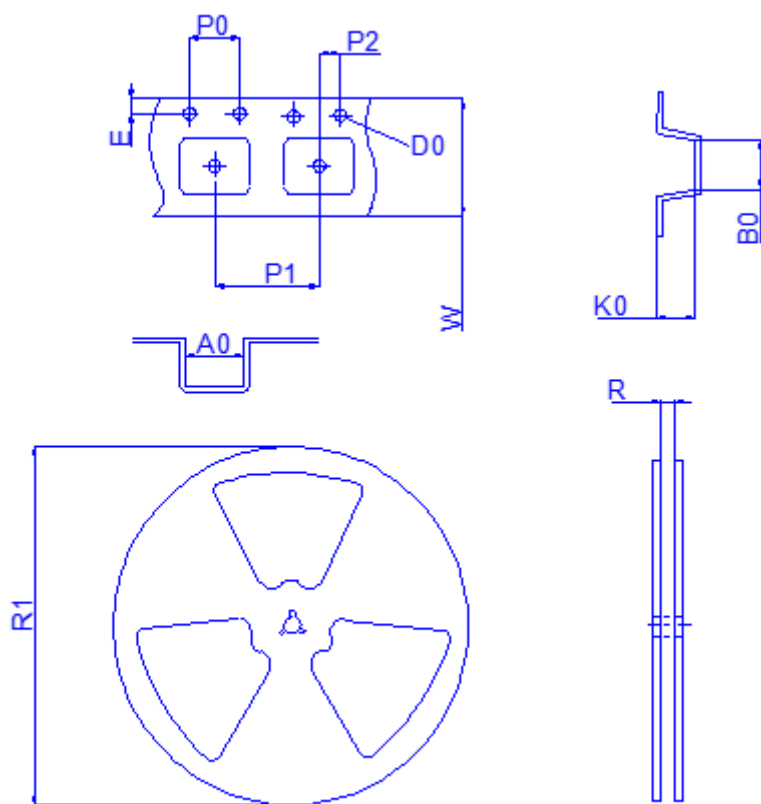
Recommended minimum pads







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



Package	EDFN5X6
Reel	13"
Device orientation	FEED DIRECTION

Dimension in mm

Dimension	Carrier tape									Reel	
	A0	B0	D0	E	K0	P0	P1	P2	W	R	R1
Typ.	6.4	5.3	1.5	1.8	1.6	4	8	2	12	12.4	330
±	0.2	0.2	0.1	0.1	0.6	0.1	0.1	0.1	0.3	2	2