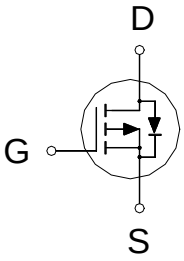
杰力科技股份有限公司
Excelliance MOS Corporation

EMB03P03H

P-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	-30V
$R_{DSON\ (MAX.)}$	3.1mΩ
I_D	-110A



P Channel MOSFET

UIS, Rg 100% Tested

Pb-Free Lead Plating & Halogen Free

GP GREEN PRODUCT

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	-110	A
	T_C = 100 °C		-70	
Pulsed Drain Current[1]		I_{DM}	-440	
Avalanche Current		I_{AS}	-80	
Avalanche Energy	L = 0.1mH	E_{AS}	320	mJ
Repetitive Avalanche Energy[2]	L = 0.05mH	E_{AR}	160	
Power Dissipation	T_C = 25 °C	P_D	65	W
	T_C = 100 °C		26	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

100% UIS testing in condition of V_D=25V, L=0.1mH, V_G=10V, I_L= 50A, Rated V_{DS}=30V P-CH

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		1.9	°C / W
Junction-to-Ambient[3]	$R_{\theta JA}$		62.5	

[1]Pulse width limited by maximum junction temperature.

[2]Duty cycle ≤ 1%

[3]62.5°C / W when mounted on a 1 in^2 pad of 2 oz copper.

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

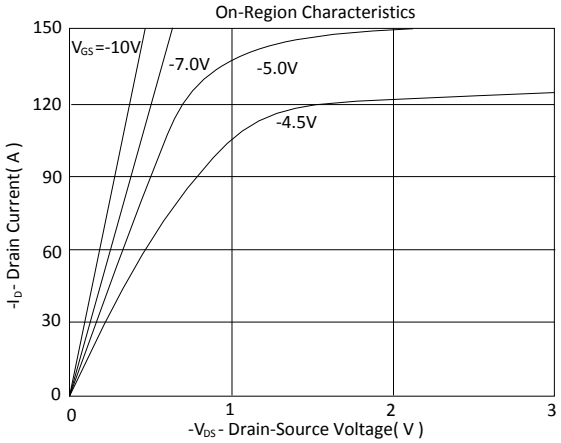
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1	-1.5	-3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero 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	-85			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -10V, I_D = -30A		2.7	3.1	mΩ
		V_{GS} = -4.5V, I_D = -30A		4.0	5.0	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -30A		70		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz		6400		pF
Output Capacitance	C_{oss}			913		
Reverse Transfer Capacitance	C_{rss}			656		
Gate Resistance	R_g	V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz		3.4		Ω
Total Gate Charge[1,2]	Q_g	V_{DS} = -15V, V_{GS} = -10V, I_D = -30A		96.5		nC
Gate-Source Charge[1,2]	Q_{gs}			24.8		
Gate-Drain Charge[1,2]	Q_{gd}			13.8		
Turn-On Delay Time[1,2]	$t_{d(on)}$	V_{DS} = -15V, I_D = -1A, V_{GS} = -10V, R_{GS} = 2.7Ω		15		nS
Rise Time[1,2]	t_r			20		
Turn-Off Delay Time[1,2]	$t_{d(off)}$			130		
Fall Time[1,2]	t_f			55		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				-85	A
Pulsed Current[3]	I_{SM}				-260	
Forward Voltage[1]	V_{SD}	I_F = -30A, V_{GS} = 0V			-1.2	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100A / μS		26		nS
Reverse Recovery Charge	Q_{rr}			80		nC

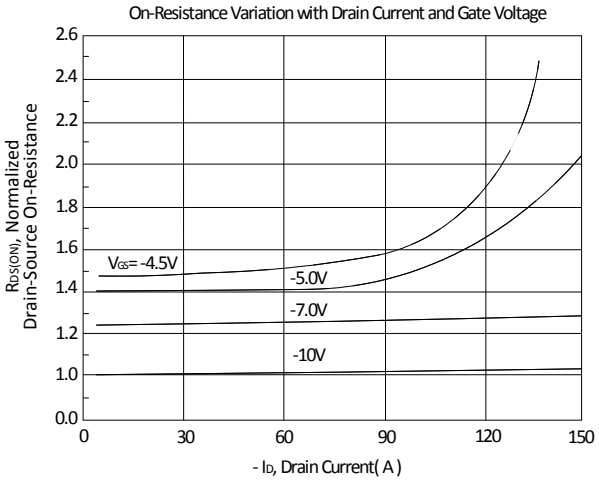
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

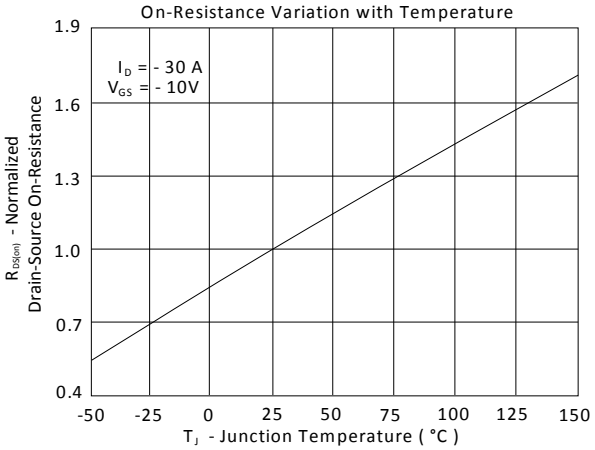
[2]Independent of operating temperature.

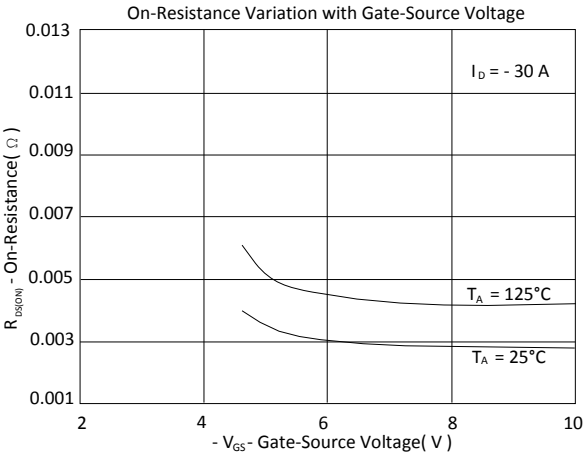
[3]Pulse width limited by maximum junction temperature.

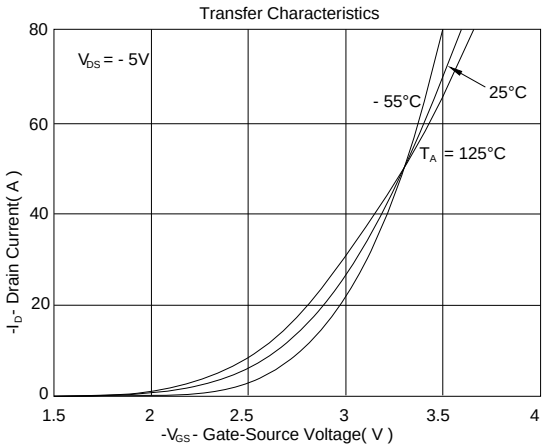
EMC will review datasheet by quarter, and update new version.

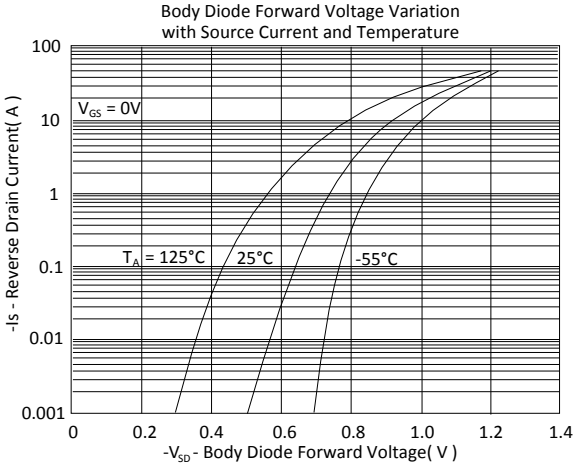

On-Region Characteristics
VGS=-10V
-7.0V
-5.0V
-4.5V
-ID- Drain Current(A)
-VDS - Drain-Source Voltage(V)

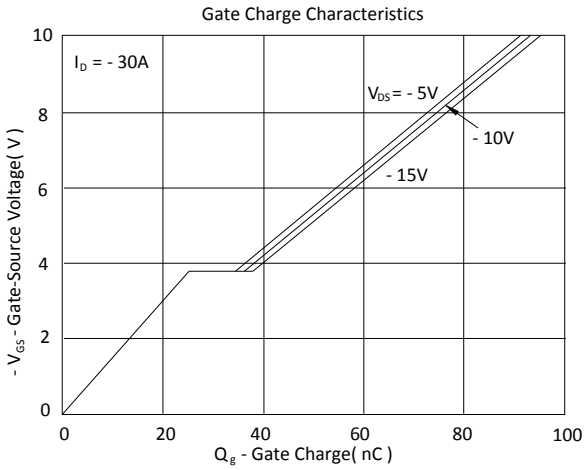

On-Resistance Variation with Drain Current and Gate Voltage
RDS(ON), Normalized
Drain-Source On-Resistance
VGS= -4.5V
-5.0V
-7.0V
-10V
- ID, Drain Current(A)

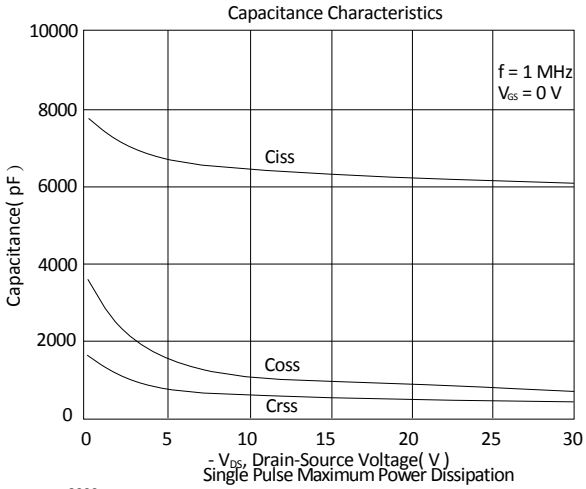

On-Resistance Variation with Temperature
ID = - 30 A
VGS = - 10V
RDS(on) - Normalized
Drain-Source On-Resistance
TJ - Junction Temperature (°C)

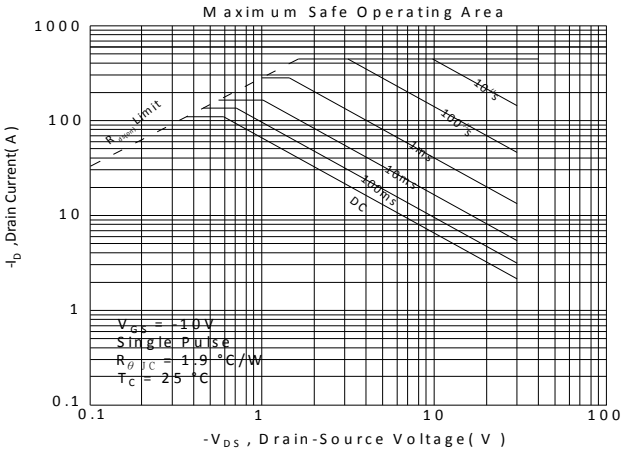

On-Resistance Variation with Gate-Source Voltage
ID = - 30 A
TA = 125°C
TA = 25°C
RDS(ON) - On-Resistance(Ω)
- VGS - Gate-Source Voltage(V)

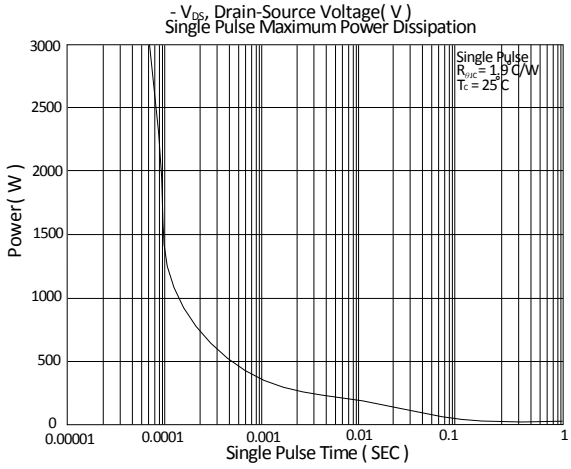

Transfer Characteristics
VDS = - 5V
- 55°C
25°C
TA = 125°C
-ID- Drain Current(A)
-VGS - Gate-Source Voltage(V)

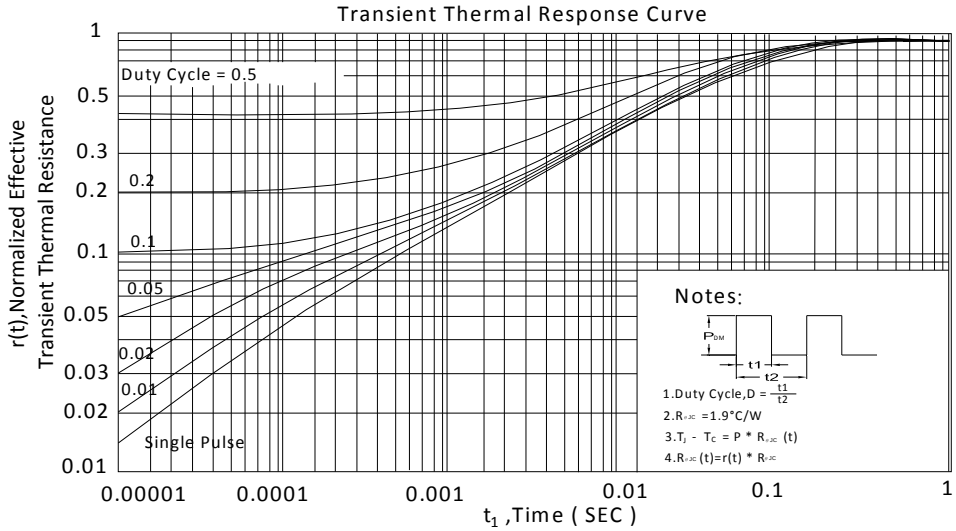

Body Diode Forward Voltage Variation
with Source Current and Temperature
VGS = 0V
TA = 125°C
25°C
-55°C
-Is - Reverse Drain Current(A)
-VSD - Body Diode Forward Voltage(V)


Gate Charge Characteristics
I_D = - 30A
V_{DS} = - 5V
- 10V
- 15V
- V_{GS} - Gate-Source Voltage(V)
Q_g - Gate Charge(nC)


Capacitance Characteristics
f = 1 MHz
V_{GS} = 0 V
Ciss
Coss
Crss
Capacitance(pF)
- V_{DS}, Drain-Source Voltage(V)

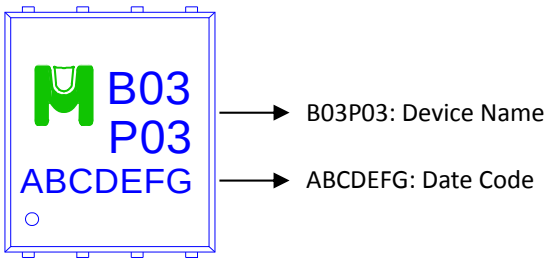

Maximum Safe Operating Area
V_{GS} = -10V
Single Pulse
$R_{\theta JC}$ = 1.9 °C/W
T_C = 25 °C
- I_D ,Drain Current(A)
- V_{DS} , Drain-Source Voltage(V)


Single Pulse Maximum Power Dissipation
Single Pulse
$R_{\theta JC}$ = 1.9 C/W
T_C = 25 °C
Power(W)
Single Pulse Time (SEC)

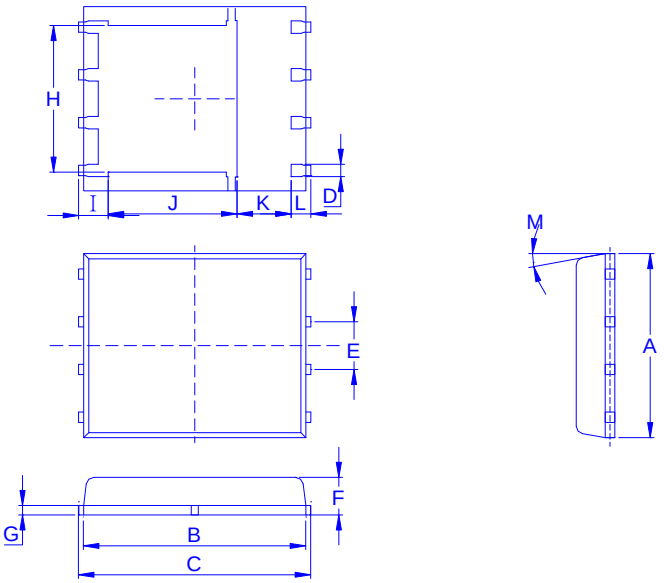

Transient Thermal Response Curve
Duty Cycle = 0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
Notes:
1.Duty Cycle,D = t1/t2
2.$R_{\theta JC}$ =1.9°C/W
3.T_J - T_C = P * $R_{\theta JC}$ (t)
4.$R_{\theta JC}$(t)=r(t) * $R_{\theta JC}$
r(t),Normalized Effective Transient Thermal Resistance
t_1 ,Time (SEC)

Ordering & Marking Information:

Device Name: EMB03P03H for EDFN5X6



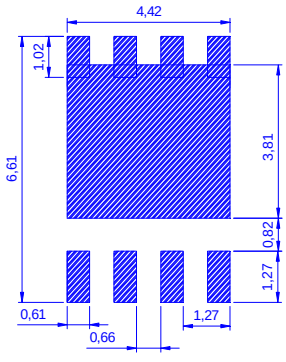
Outline Drawing



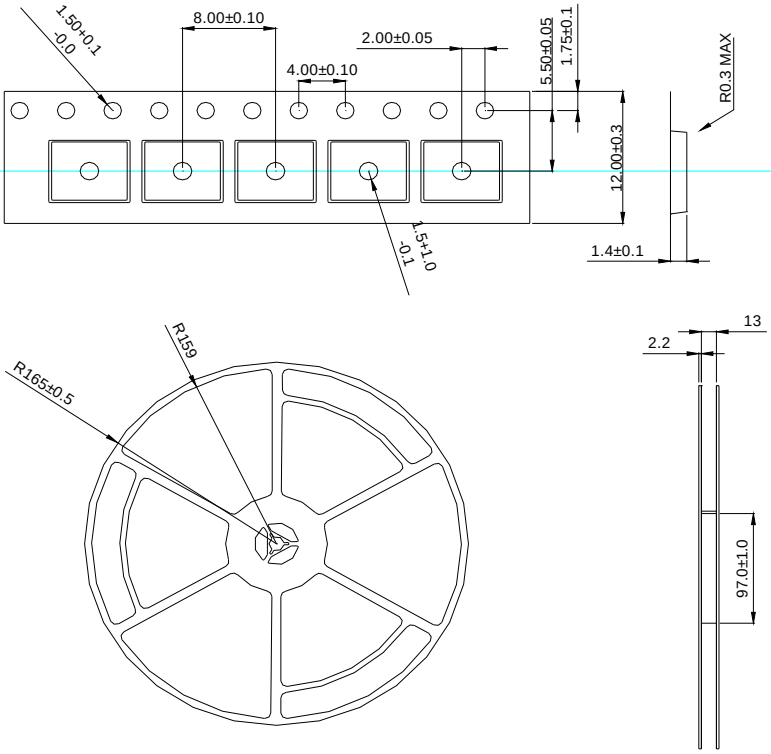
Dimension in mm

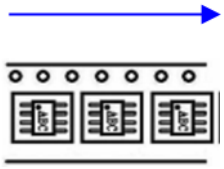
Dimension	A	B	C	D	E	F	G	H	I	J	K	L	M
Min	4.80	5.55	5.90	0.30	1.17	0.85	0.15	3.61	0.38	3.18	1.00	0.38	0 °
Typ.	4.90	5.70	6.00	0.40	1.27	0.95	0.20	3.87	0.40	3.44	1.20	0.40	
Max	5.40	5.85	6.15	0.51	1.37	1.17	0.34	4.31	0.71	3.78	1.39	0.71	12 °

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