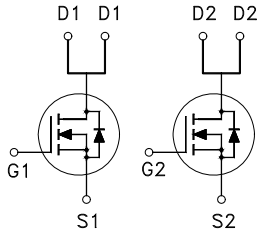
杰力科技股份有限公司
Excelliance MOS Corporation

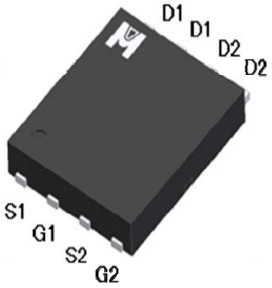
EMBB0A10H

Dual N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	100V
$R_{DSON\ (MAX.)}$	220mΩ
I_D	5.7A





UIS 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	5.7	A
	T_C = 100 °C		3.6	
Pulsed Drain Current[1]		I_{DM}	22	
Avalanche Current		I_{AS}	3	
Avalanche Energy	L = 0.1mH, ID=3A, RG=25Ω	E_{AS}	0.45	mJ
Repetitive Avalanche Energy[2]	L = 0.05mH	E_{AR}	0.225	
Power Dissipation	T_C = 25 °C	P_D	12.5	W
	T_c= 100 °C		5	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		10	°C / W
Junction-to-Ambient[3]	$R_{\theta JA}$		75	

[1]Pulse width limited by maximum junction temperature.

[2]Duty cycle ≤ 1%

[3]75°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	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	2.9	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80V, V_{GS} = 0V			1	μA
		V_{DS} = 70V, V_{GS} = 0V, T_J = 125 °C			25	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	5.7			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 3A		185	220	mΩ
		V_{GS} = 4.5V, I_D = 2A		215	260	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 3A		4		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 50V, f = 1MHz		858		pF
Output Capacitance	C_{oss}			38		
Reverse Transfer Capacitance	C_{rss}			27		
Total Gate Charge[1,2]	Q_g(V_{GS}=10V)	V_{DS} = 15V, V_{GS} = 10V, I_D = 2A		14.3	20	nC
	Q_g(V_{GS}=5V)			8	10	
Gate-Source Charge[1,2]	Q_{gs}			2.9		
Gate-Drain Charge[1,2]	Q_{gd}			3.4		
Turn-On Delay Time[1,2]	$t_{d(on)}$	V_{DS} = 15V, I_D = 1A, V_{GS} = 10V, R_{GS} = 6Ω		20		nS
Rise Time[1,2]	t_r			30		
Turn-Off Delay Time[1,2]	$t_{d(off)}$			36		
Fall Time[1,2]	t_f			30		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				5.7	A
Pulsed Current[3]	I_{SM}				22	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}			50		nS
Reverse Recovery Charge	Q_{rr}			90		nC

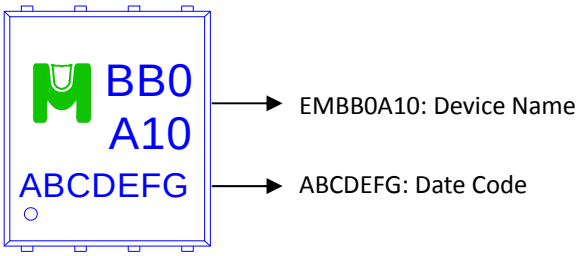
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

[2]Independent of operating temperature.

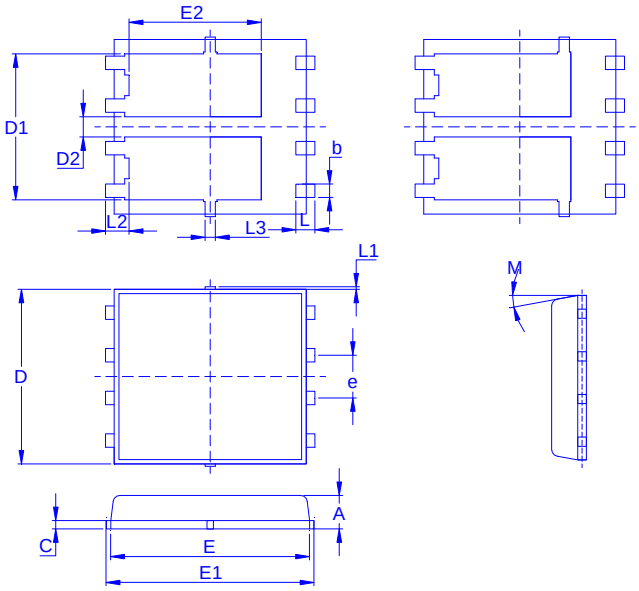
[3]Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: EMBB0A10H for EDFN 5 x 6



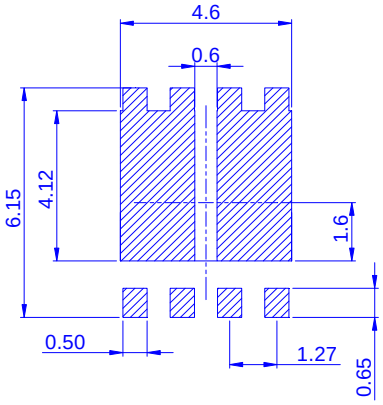
Outline Drawing

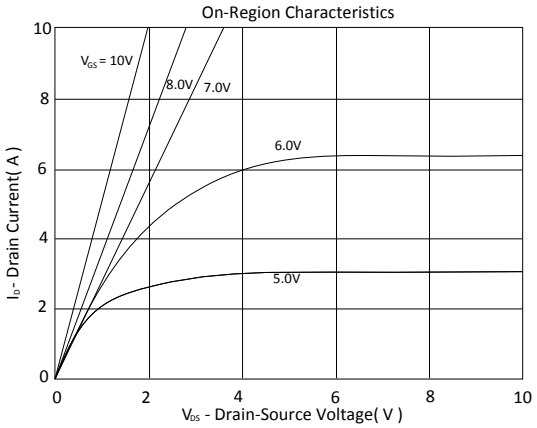


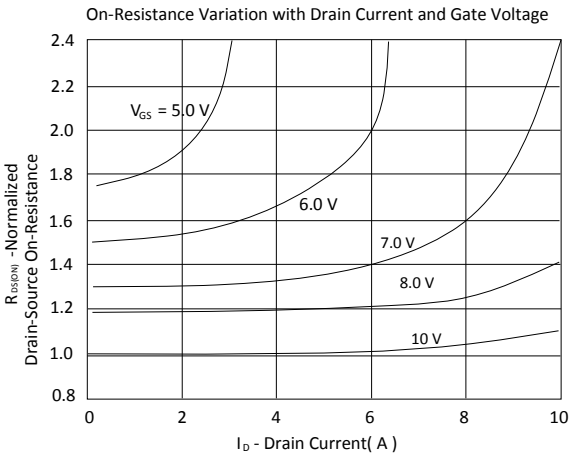
Dimension in mm

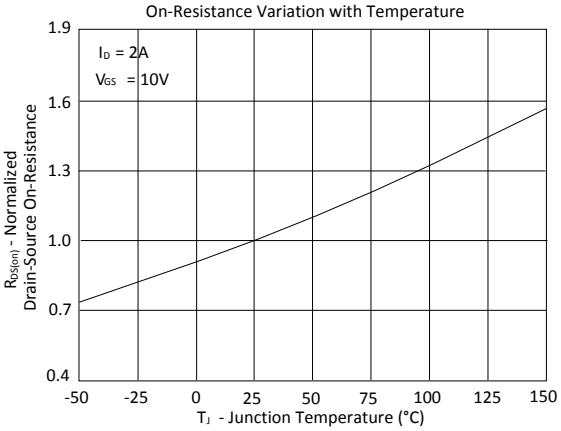
Dimension	A	b	c	D	D1	D2	E	E1	E2	e	L	L1	L2	M
Min.	0.85	0.3	0.15	4.8	3.41	0.47	5.65	5.95	3.30		0.38	0	0.38	0°
Typ.	1.01	0.4	0.2	5	4.01	0.67	5.75	6.05	3.43	1.27	0.55	0.09	0.48	
Max.	1.17	0.5	0.25	5.2	4.61	0.87	5.85	6.15	3.58		0.71	0.18	0.58	12°

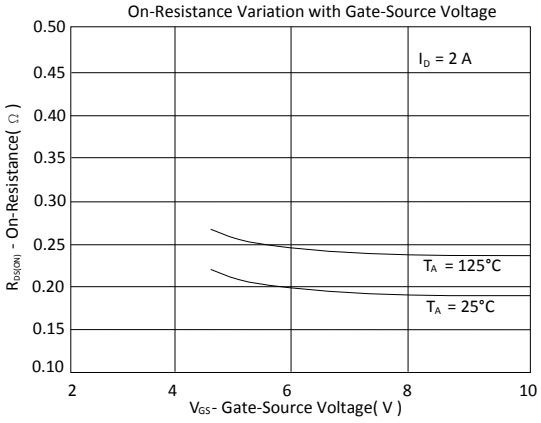
Recommended minimum pads

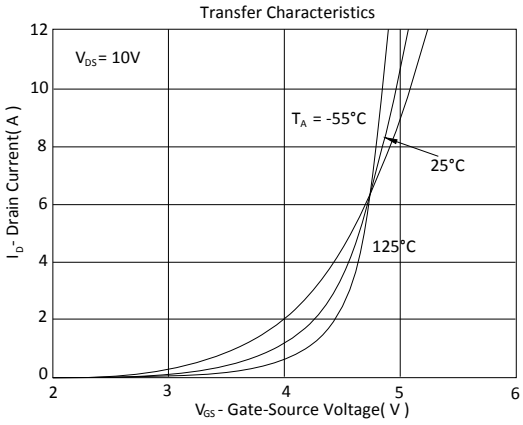


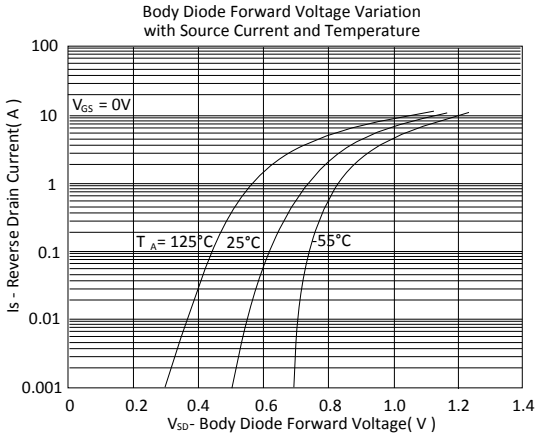

On-Region Characteristics
V_{GS} = 10V
8.0V
7.0V
6.0V
5.0V
I_D - Drain Current(A)
V_{DS} - Drain-Source Voltage(V)

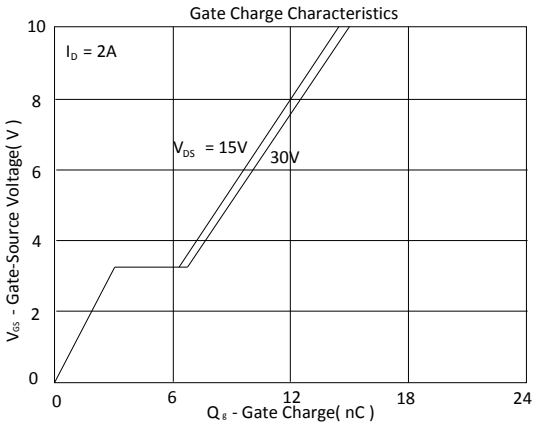

On-Resistance Variation with Drain Current and Gate Voltage
V_{GS} = 5.0 V
6.0 V
7.0 V
8.0 V
10 V
$R_{DS(ON)}$ -Normalized
Drain-Source On-Resistance
I_D - Drain Current(A)

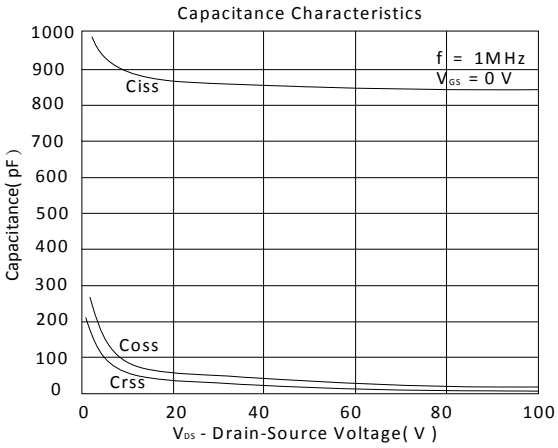

On-Resistance Variation with Temperature
I_D = 2A
V_{GS} = 10V
$R_{DS(on)}$ - Normalized
Drain-Source On-Resistance
T_J - Junction Temperature (°C)

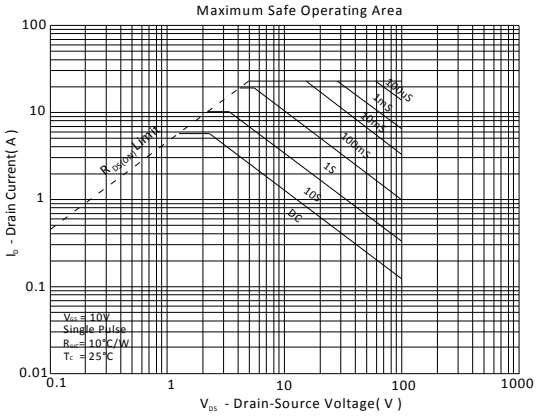

On-Resistance Variation with Gate-Source Voltage
I_D = 2 A
T_A = 125°C
T_A = 25°C
$R_{DS(ON)}$ - On-Resistance(Ω)
V_{GS}- Gate-Source Voltage(V)

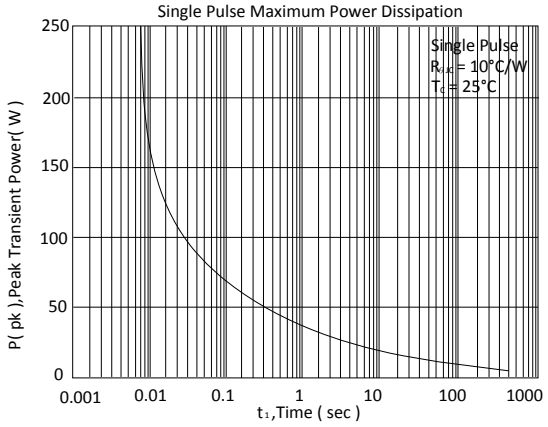

Transfer Characteristics
V_{DS}= 10V
T_A = -55°C
25°C
125°C
I_D- Drain Current(A)
V_{GS} - Gate-Source Voltage(V)

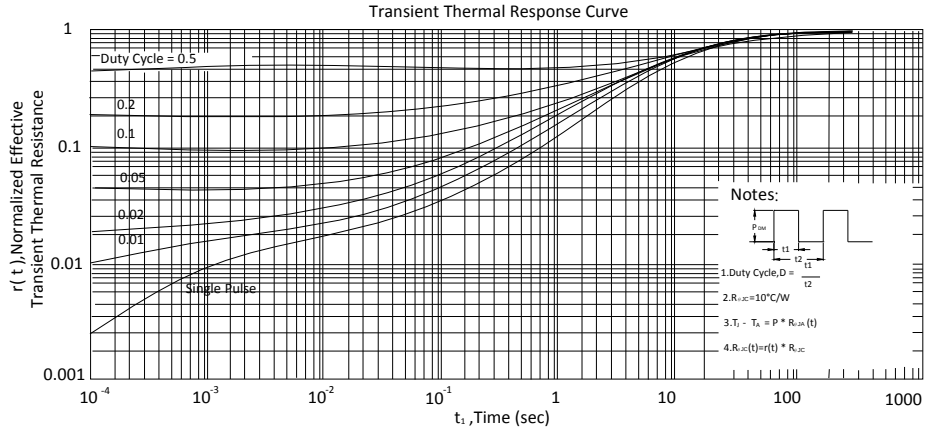

Body Diode Forward Voltage Variation
with Source Current and Temperature
V_{GS} = 0V
T_A= 125°C
25°C
-55°C
Is - Reverse Drain Current(A)
V_{SD}- Body Diode Forward Voltage(V)


Gate Charge Characteristics
I_D = 2A
V_{DS} = 15V
30V
V_{GS} - Gate-Source Voltage(V)
Q_g - Gate Charge(nC)


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


Maximum Safe Operating Area
$R_{DS(on)}$ Limit
100μs
1ms
10ms
100ms
1s
10s
DC
V_{GS} = 10V
Single Pulse
$R_{θJC}$ = 10°C/W
T_C = 25°C
I_D - Drain Current(A)
V_{DS} - Drain-Source Voltage(V)


Single Pulse Maximum Power Dissipation
Single Pulse
$R_{θJC}$ = 10°C/W
T_C = 25°C
P(pk),Peak Transient Power(W)
t_1 ,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 =
2.$R_{θJC}$=10°C/W
3.T_J - T_A = P * $R_{θJA}$ (t)
4.$R_{θJC}$(t)=r(t) * $R_{θJC}$
r(t),Normalized Effective Transient Thermal Resistance
t_1 ,Time (sec)