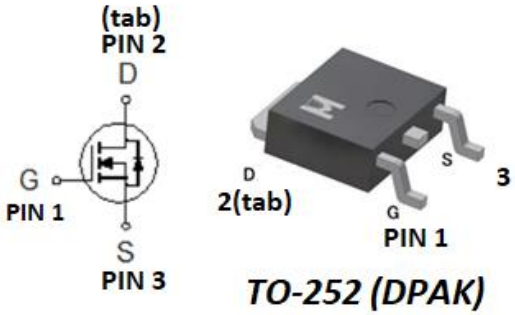
杰力科技股份有限公司
Excelliance MOS Corporation

EMB06N03A

N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

	N-CH
BV_{DSS}	30V
$R_{DSON\ (MAX.)}$@V_{GS}=10V	6.0mΩ
I_D @T_C=25°C	70A



Single N Channel MOSFET

UIS, Rg 100% Tested

RoHS & Halogen Free & TSCA Compliant

ABSOLUTE MAXIMUM RATINGS (T_C = 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	70	A
	T_C = 100 °C		56	
Pulsed Drain Current[1]		I_{DM}	280	
Avalanche Current		I_{AS}	30	
Avalanche Energy	L = 0.1mH	E_{AS}	45	mJ
Repetitive Avalanche Energy[2]	L = 0.05mH	E_{AR}	22.5	
Power Dissipation	T_C = 25 °C	P_D	50	W
	T_C = 100 °C		20	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

100% UIS testing in condition of VD=25V, L=0.1mH, VG=10V, IL= 18A, Rated VDS=30V N-CH

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		2.5	°C / W
Junction-to-Ambient[3]	$R_{\theta JA}$		75	

[1]Pulse width limited by maximum junction temperature.

[2]Duty cycle ≤ 1%

[3]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

[4]Guarantee 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	
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			25	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 10V, V_{GS} = 10V	70			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 30A		5.3	6	mΩ
		V_{GS} = 4.5V, I_D = 20A		7.5	9.5	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 24A		25		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		1983		pF
Output Capacitance	C_{oss}			328		
Reverse Transfer Capacitance	C_{rss}			287		
Gate Resistance	R_g	V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz		1.6		Ω
Total Gate Charge[1,2]	Q_g(V_{GS}=10V)	V_{DS} = 15V, V_{GS} = 10V, I_D = 30A		34.6		nC
	Q_g(V_{GS}=4.5V)			21		
Gate-Source Charge[1,2]	Q_{gs}			4.8		
Gate-Drain Charge[1,2]	Q_{gd}			9.7		
Turn-On Delay Time[1,2]	$t_{d(on)}$	V_{DS} = 15V, V_{GS} = 10V, I_D = 5A, R_g = 3Ω		9		nS
Rise Time[1,2]	t_r			15		
Turn-Off Delay Time[1,2]	$t_{d(off)}$			30		
Fall Time[1,2]	t_f			20		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				70	A
Pulsed Current[3]	I_{SM}				280	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0V			1.3	V
Reverse Recovery Time	t_{rr}	I_F = I_S, dI_F/dt = 100A / μS		12		nS
Peak Reverse Recovery Current	$I_{RM(REC)}$			1.2		A
Reverse Recovery Charge	Q_{rr}			8		nC

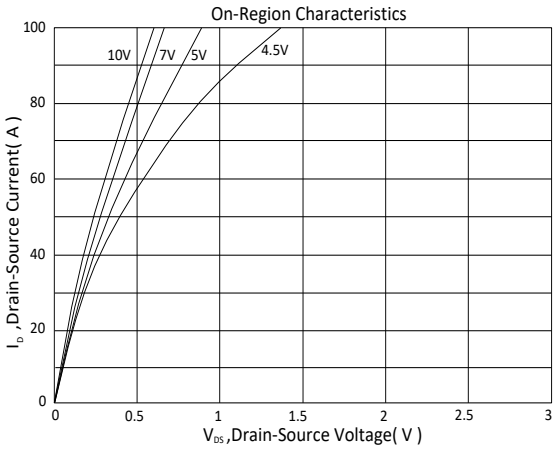
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

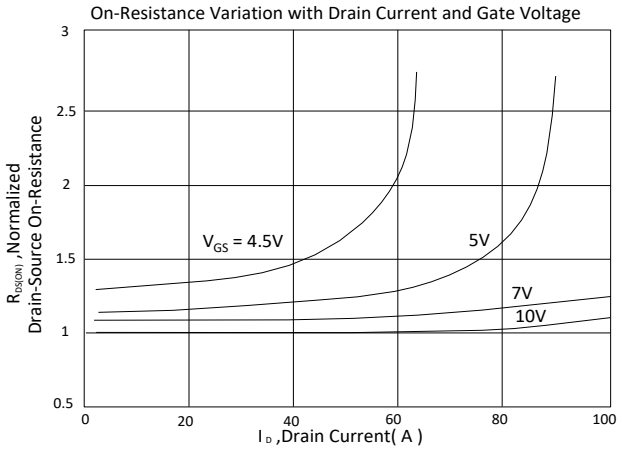
[2]Independent of operating temperature.

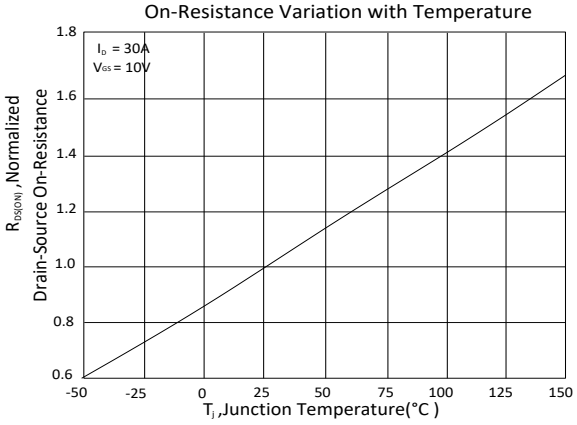
[3]Pulse width limited by maximum junction temperature.

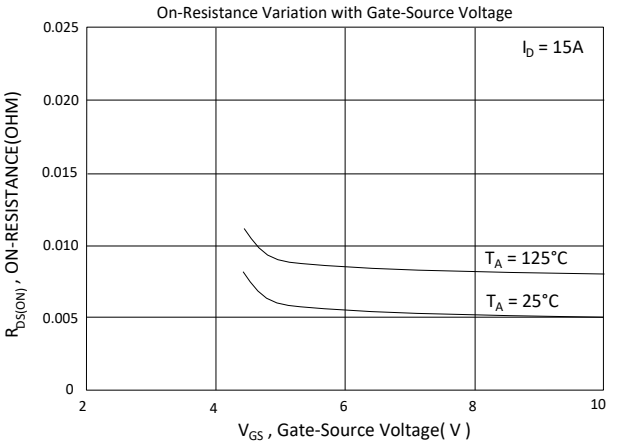
EMC will review datasheet by quarter, and update new version.

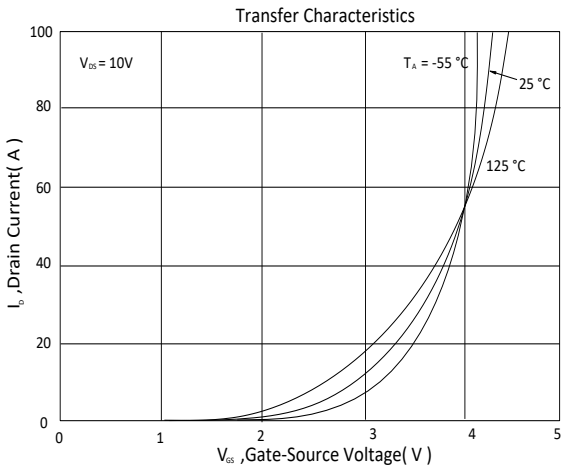
TYPICAL CHARACTERISTICS

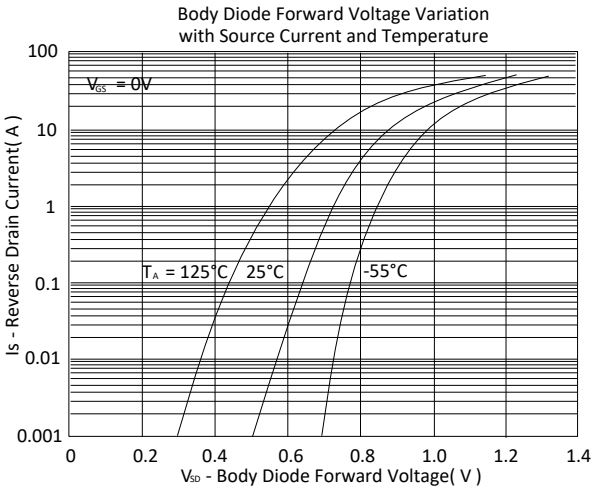


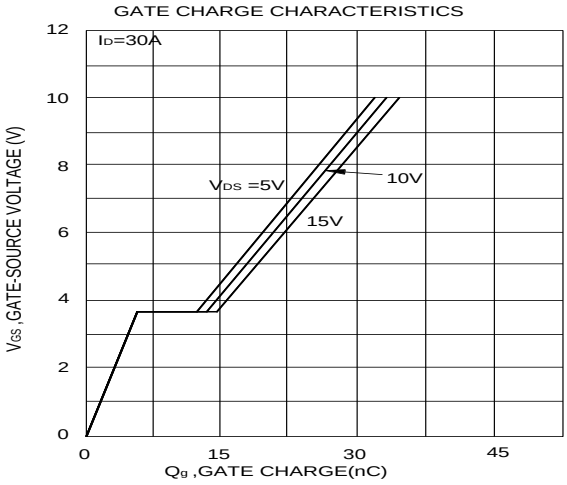


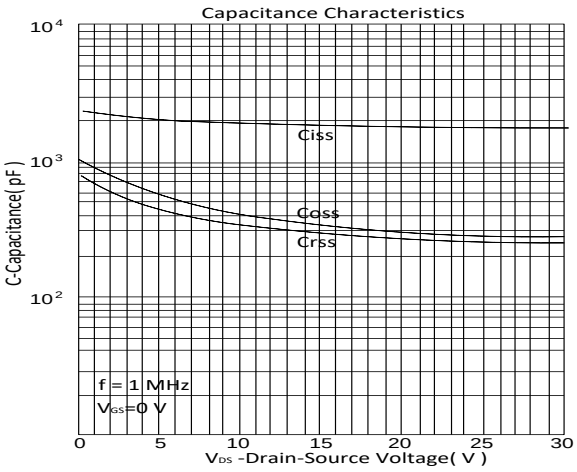


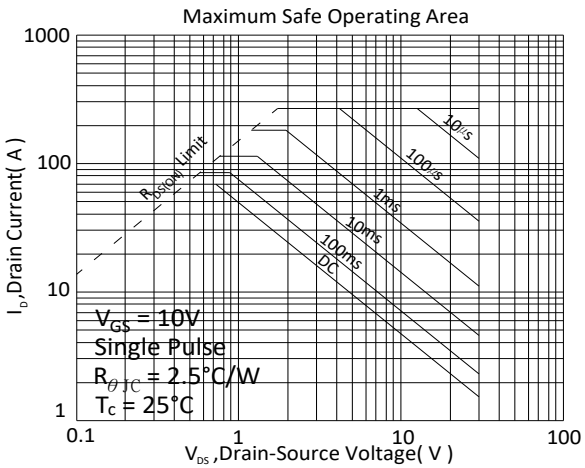


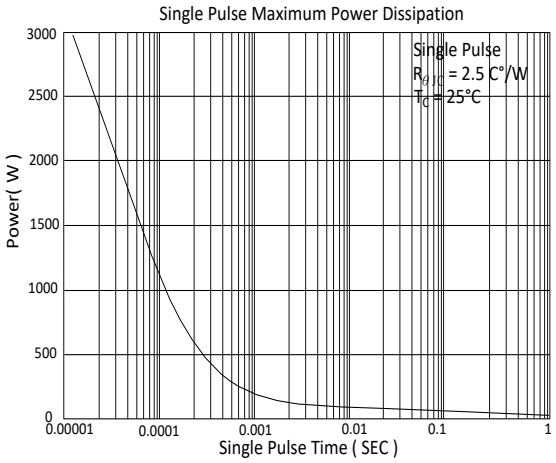


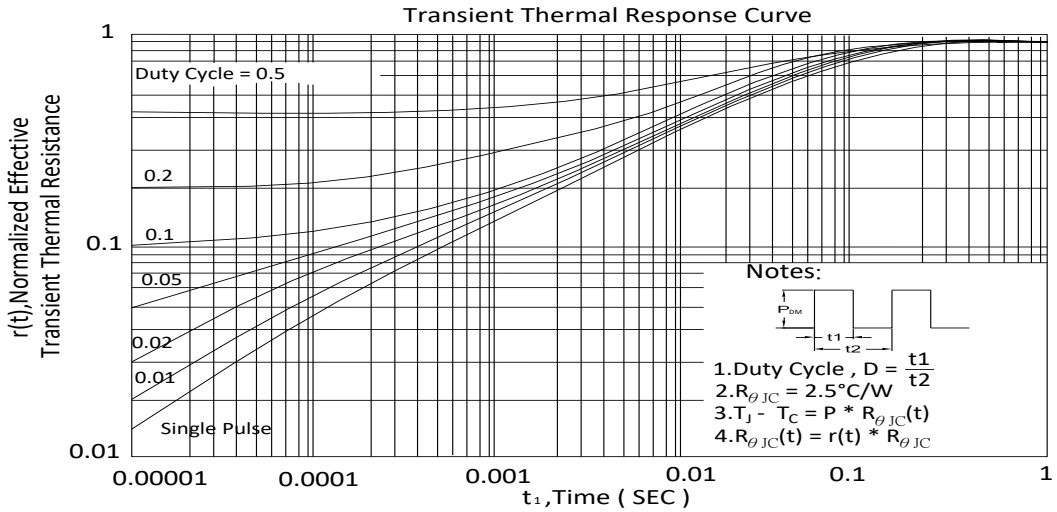



GATE CHARGE CHARACTERISTICS
ID=30A
VDS =5V
10V
15V
VGS ,GATE-SOURCE VOLTAGE (V)
Qg ,GATE CHARGE(nC)


Capacitance Characteristics
Ciss
Coss
Crss
f = 1 MHz
VGS=0 V
C-Capacitance(pF)
VDS -Drain-Source Voltage(V)


Maximum Safe Operating Area
RDS(ON) Limit
10μs
100μs
1ms
10ms
100ms
DC
VGS = 10V
Single Pulse
RθJC = 2.5°C/W
TC = 25°C
ID,Drain Current(A)
VDS ,Drain-Source Voltage(V)


Single Pulse Maximum Power Dissipation
Single Pulse
RθJC = 2.5°C/W
TC = 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.RθJC = 2.5°C/W
3.TJ - TC = P * RθJC(t)
4.RθJC(t) = r(t) * RθJC
r(t),Normalized Effective Transient Thermal Resistance
t1 ,Time (SEC)

Ordering & Marking Information:

Device Name: EMB06N03A for TO-252 [DPAK]

B06N03 : Device Name

ABCDEFG: Date Code

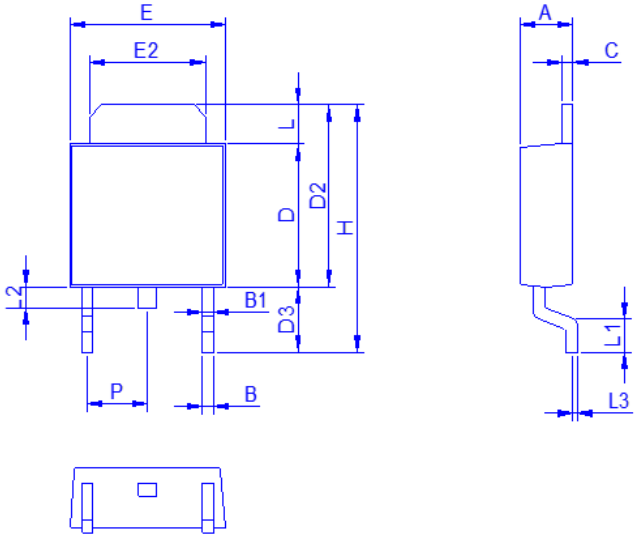
A: Assembly House

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)

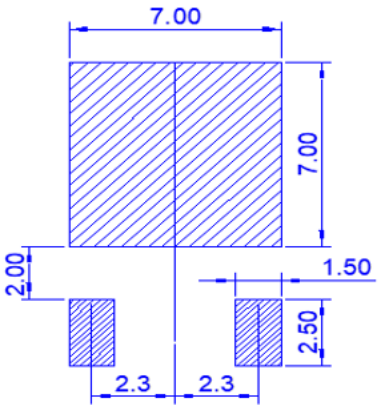
DEFG: Serial No.

Outline Drawing

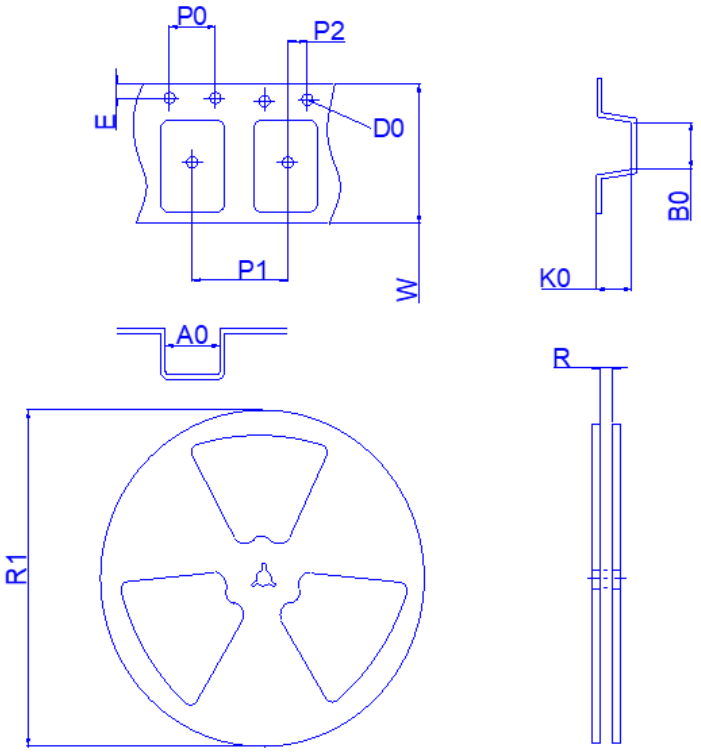


Dimension	A	B	B1	C	D	D2	D3	E	E2	H	L	L1	L2	L3	P
Min.	2.1	0.62	0.65	0.45	5.96	6.8	2.6	6.3	4.9	9.3	0.8	1.2	0.5	0	2.1
Typ.	2.25	0.76	0.9	0.67	6.1	7.15	2.8	6.5	5.2	9.9	1.1	1.65	0.8	0.1	2.25
Max.	2.4	0.9	1.15	0.89	6.24	7.5	3	6.7	5.5	10.5	1.4	2.1	1.1	0.2	2.4

Footprint



◆**Tape&Reel Information:2500pcs/Reel**



產品別	TO252-2
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.	6.9	10.5	1.55	1.75	2.7	4	8	2	16	17	330
±	1	1	0.2	0.1	0.2	0.2	0.1	0.1	0.3	2	2