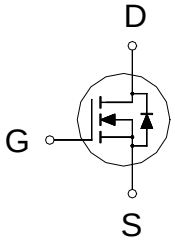
杰力科技股份有限公司
Excelliance MOS Corporation

EMB80N03J

N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	30V
$R_{DSON\ (MAX.)}$	80mΩ
I_D	2.5A



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_A = 25 °C	I_D	2.5	A
	T_A = 70 °C		1.75	
Pulsed Drain Current[1]		I_{DM}	10	
Power Dissipation	T_A = 25 °C	P_D	1.25	W
	T_A = 70 °C		0.8	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Ambient	$R_{\theta JA}$		100	°C / W

[1]Pulse width limited by maximum junction temperature.

[2]Duty cycle ≤ 1%

ELECTRICAL CHARACTERISTICS (T_A = 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	2.5			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 2.5A		68	80	mΩ
		V_{GS} = 4.5V, I_D = 1.5A		100	128	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 2.5A		5		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 10V, f = 1MHz		319		pF
Output Capacitance	C_{oss}			66		
Reverse Transfer Capacitance	C_{rss}			53		
Total Gate Charge[1,2]	Q_g	V_{DS} = 10V, V_{GS} = 10V, I_D = 2.5A		6		nC
Gate-Source Charge[1,2]	Q_{gs}			0.8		
Gate-Drain Charge[1,2]	Q_{gd}			1.8		
Turn-On Delay Time[1,2]	$t_{d(on)}$	V_{DS} = 10V, I_D = 1A, V_{GS} = 10V, R_{GS} = 6Ω		8		nS
Rise Time[1,2]	t_r			2.5		
Turn-Off Delay Time[1,2]	$t_{d(off)}$			20		
Fall Time[1,2]	t_f			5		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				2	A
Pulsed Current[3]	I_{SM}				8	
Forward Voltage[1]	V_{SD}	I_F = I_S, V_{GS} = 0V			1.2	V

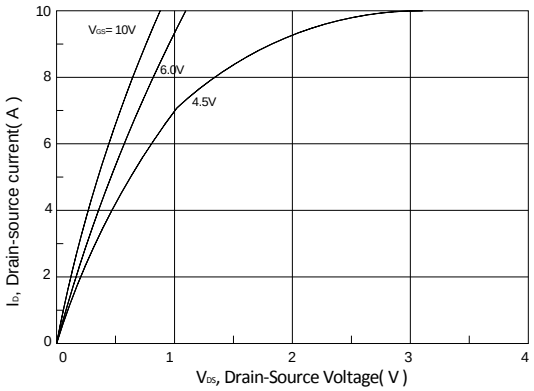
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

[2]Independent of operating temperature.

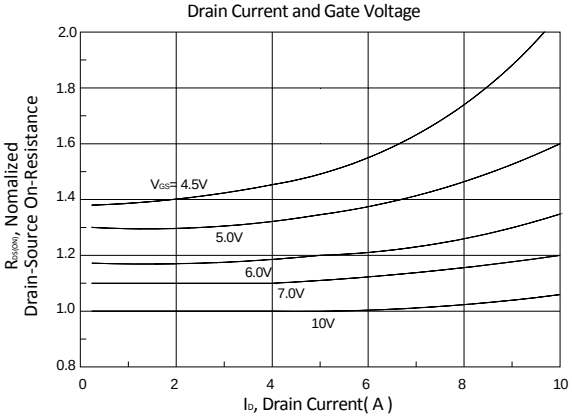
[3]Pulse width limited by maximum junction temperature.

TYPICAL CHARACTERISTICS

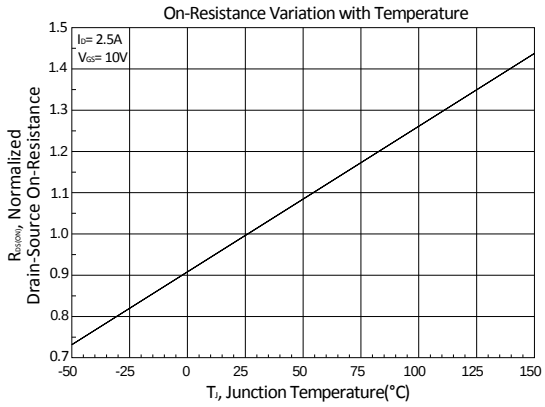
On-Region Characteristics



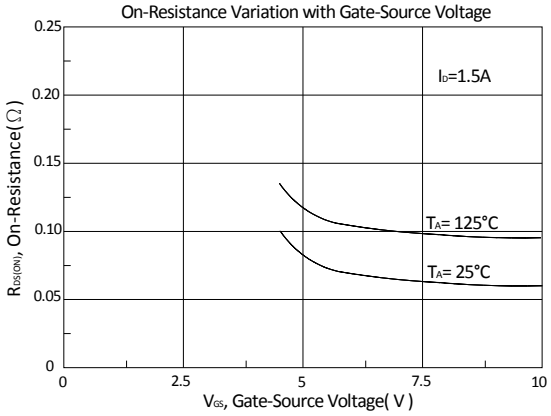
On-Resistance Variation with Drain Current and Gate Voltage



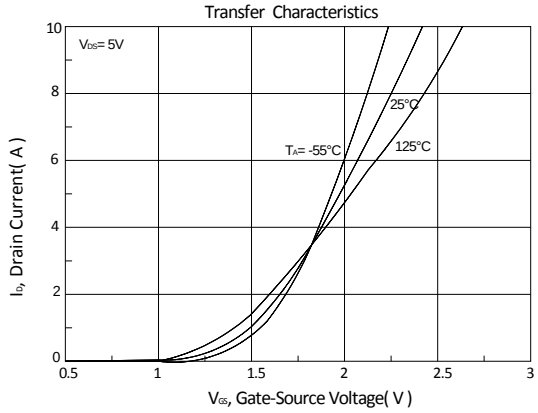
On-Resistance Variation with Temperature



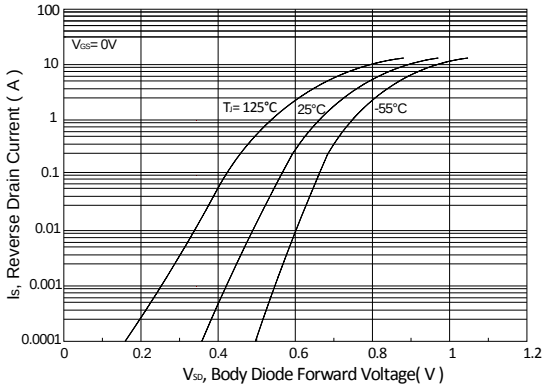
On-Resistance Variation with Gate-Source Voltage



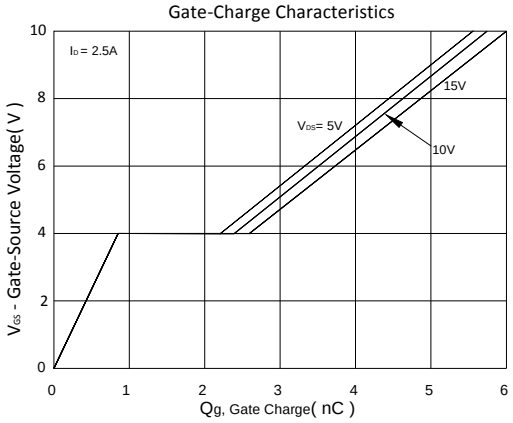
Transfer Characteristics



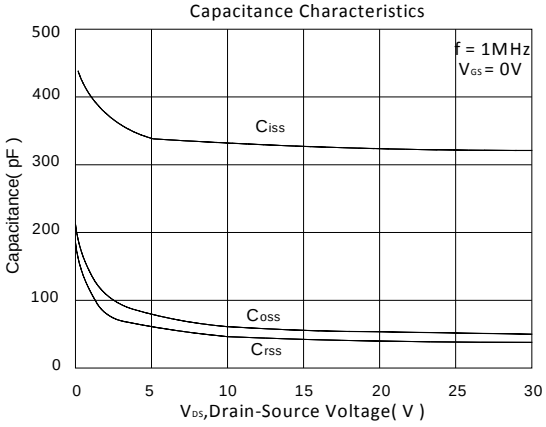
Body Diode Forward Voltage Variation with Source Current and Temperature



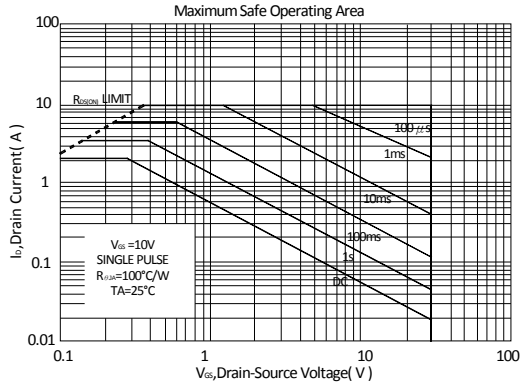
Gate-Charge Characteristics



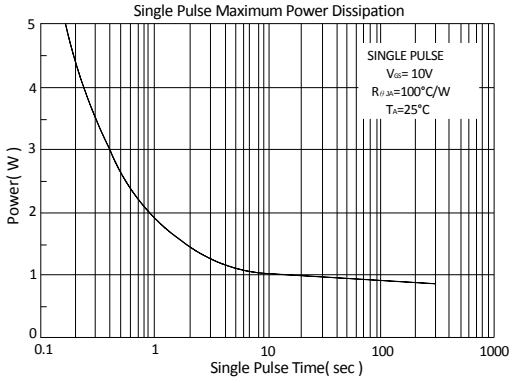
Capacitance Characteristics



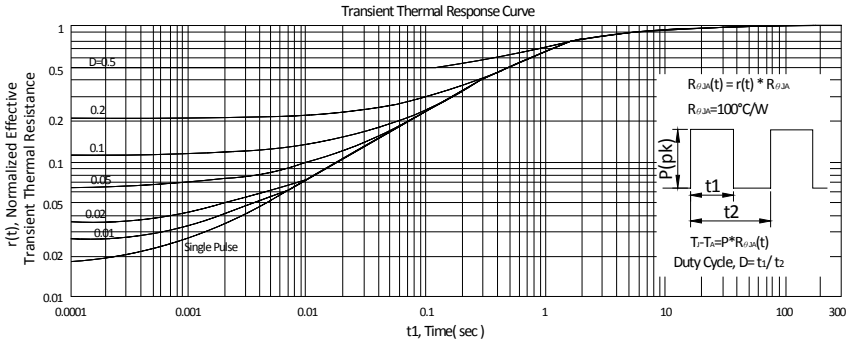
Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation

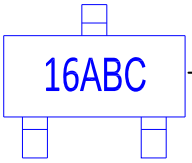


Transient Thermal Response Curve



Ordering & Marking Information:

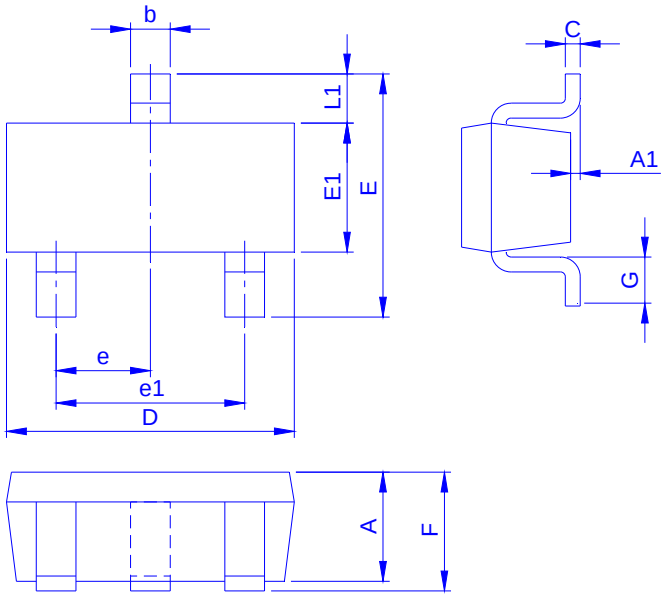
Device Name: EMB80N03J for SOT-23



16: Device Code, 16 for EMB80N03

ABC: Date Code

Outline Drawing



Dimension in mm

Dimension	A	A1	A2	b	C	D	E	E1	e	e1	F	G	L1
Min.	0.7	0		0.35	0.1	2.8	2.6	1.5	0.9		0.8	0.3	0.55
Typ.						2.9	2.8	1.6	0.95	1.9			
Max.	1.12	0.1		0.5	0.2	3	3	1.7	1		1.2	0.6	0.65

Footprint