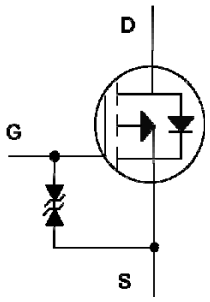
杰力科技股份有限公司
Excelliance MOS Corporation

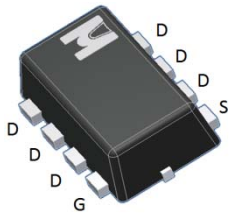
EMZB20P03L

P-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	-30V
$R_{DSON\ (MAX.)}$	24mΩ
I_D	-8A





UIS, Rg 100% Tested

Pb-Free Lead Plating & Halogen Free

ESD Protection

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	±25	V
Continuous Drain Current	T_A = 25 °C	I_D	-8	A
	T_A = 70 °C		-6	
Pulsed Drain Current[1]		I_{DM}	-32	
Avalanche Current		I_{AS}	-10	
Avalanche Energy	L = 0.1mH, I_D=-10A, R_G=25Ω	E_{AS}	5	mJ
Repetitive Avalanche Energy[2]	L = 0.05mH	E_{AR}	2.5	
Power Dissipation[3]	T_A = 25 °C	P_D	2.5	W
	T_A = 70 °C		1	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Lead	Steady-State	$R_{\theta JL}$		30	°C / W
Junction-to-Ambient[4]	t ≦ 10s	$R_{\theta JA}$		50	
	Steady-State			90	

[1]Pulse width limited by maximum junction temperature.

[2]Duty cycle ≤ 1%

[3]The power dissipation PD is based on $T_{J(MAX)}$=150°C, using ≦10s junction-to-ambient thermal resistance.

[4]The value of $R_{\theta JA}$ is measured with 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			±30	μA
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	-8			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -10V, I_D = -8A		20	24	mΩ
		V_{GS} = -4.5V, I_D = -7A		29	38	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -8A		24		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz		1407		pF
Output Capacitance	C_{oss}			208		
Reverse Transfer Capacitance	C_{rss}			164		
Gate Resistance	R_g	V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz		4.5		Ω
Total Gate Charge[1,2]	Q_g(V_{GS}=10V)	V_{DS} = -15V, V_{GS} = -10V, I_D = -8A		20.3		nC
	Q_g(V_{GS}=4.5V)			10		
Gate-Source Charge[1,2]	Q_{gs}			3.2		
Gate-Drain Charge[1,2]	Q_{gd}			4.9		
Turn-On Delay Time[1,2]	$t_{d(on)}$	V_{DS} = -15V, I_D = -1A, V_{GS} = -10V, R_{GS} = 2.7Ω		10		nS
Rise Time[1,2]	t_r			8		
Turn-Off Delay Time[1,2]	$t_{d(off)}$			25		
Fall Time[1,2]	t_f			6		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				-3	A
Pulsed Current[3]	I_{SM}				-12	
Forward Voltage[1]	V_{SD}	I_F = I_S A, 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

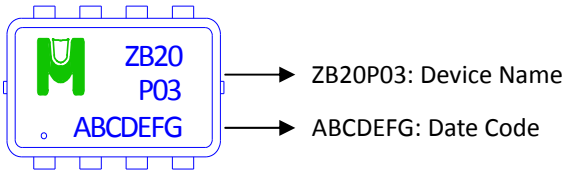
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

[2]Independent of operating temperature.

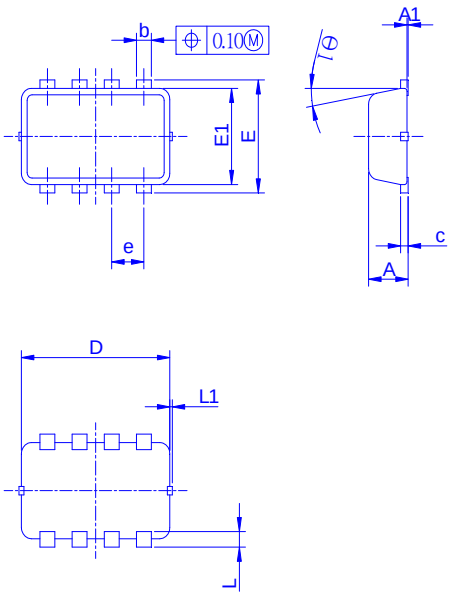
[3]Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: EMZB20P03L for DFN 3 x 2



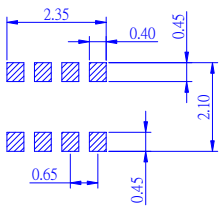
Outline Drawing



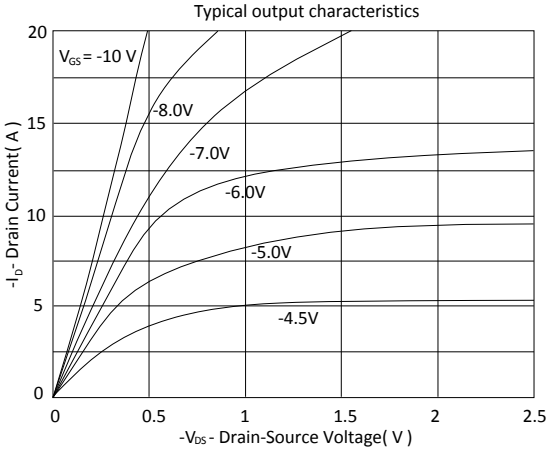
Dimension in mm

Dimension	A	A1	b	c	D	E	E1	e	L	L1	θ1
Min.	0.70	0.00	0.24	0.08					0.20	0.00	0°
Typ.					3.00	2.00	1.70	0.65			
Max.	0.90	0.05	0.35	0.25					0.40	0.10	12°

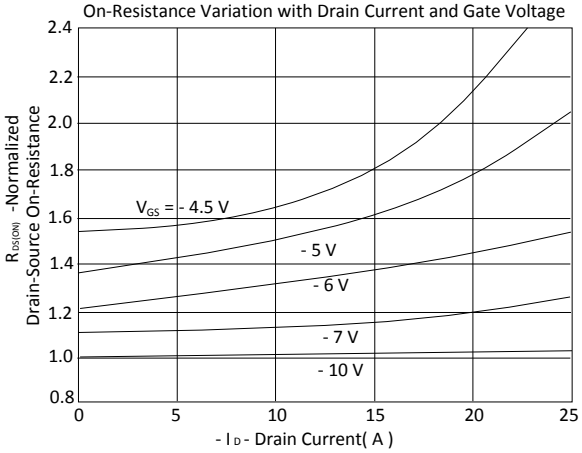
Recommended minimum pads



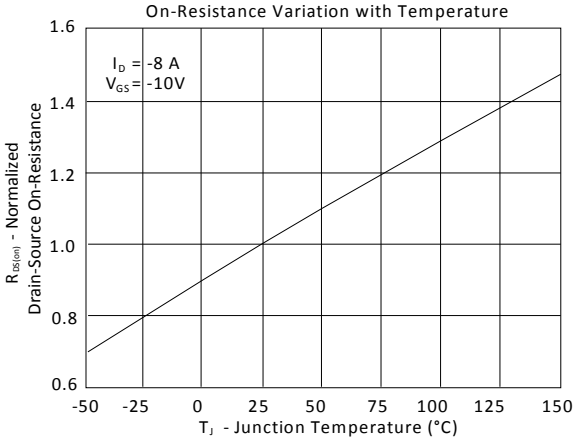
Typical output characteristics



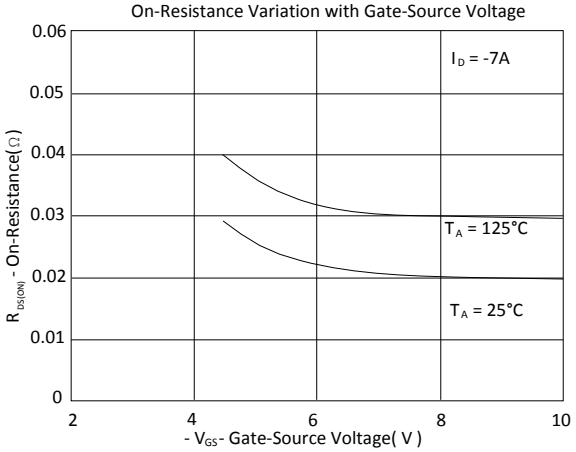
On-Resistance Variation with Drain Current and Gate Voltage



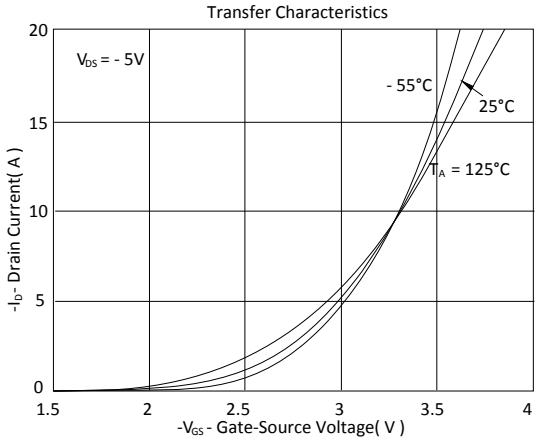
On-Resistance Variation with Temperature



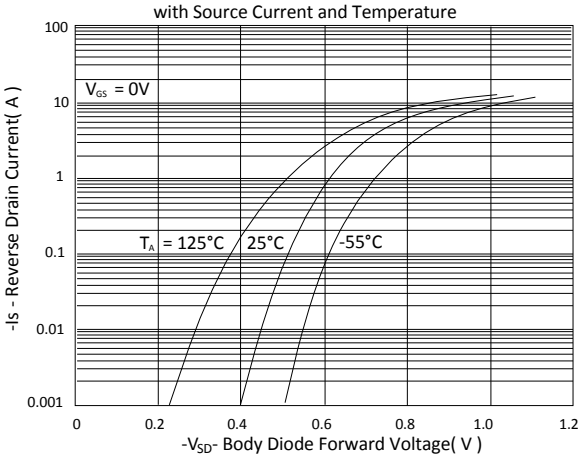
On-Resistance Variation with Gate-Source Voltage



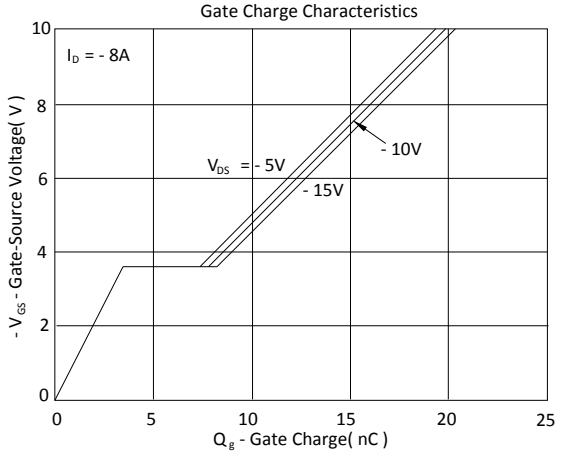
Transfer Characteristics



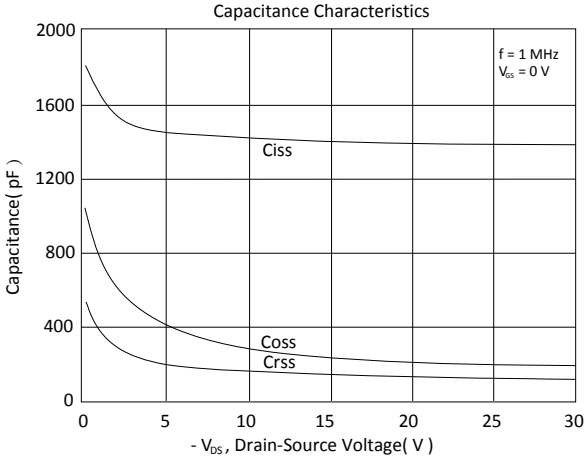
Body Diode Forward Voltage Variation with Source Current and Temperature



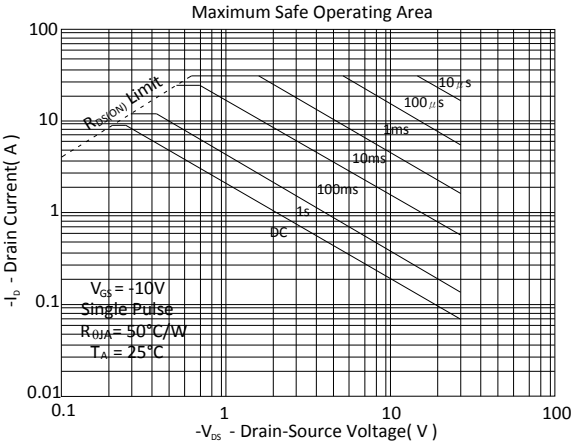
Gate Charge Characteristics



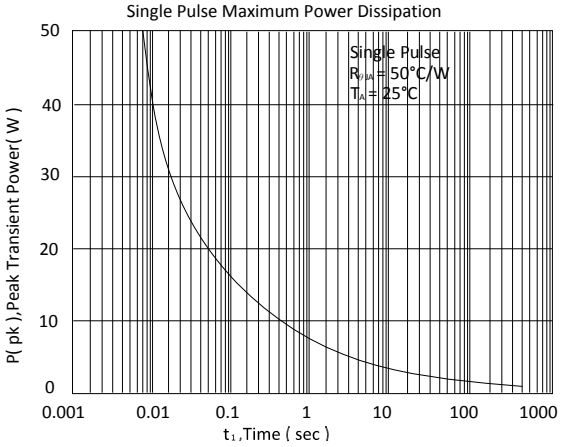
Capacitance Characteristics



Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve