

P-Channel Logic Level Enhancement Mode Field Effect Transistor

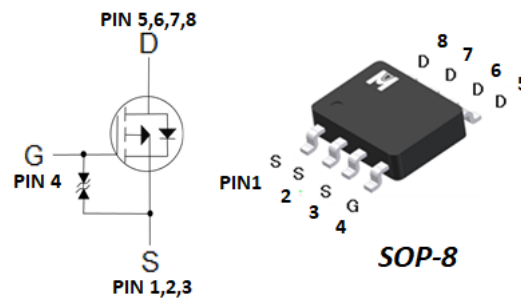
Product Summary:

BV_{DSS}	-30V
$R_{DS(on)} (MAX.)$	8.5 m Ω
I_D	-20A

UIS, Rg 100% Tested

RoHS & Halogen Free & TSCA Compliant

ESD Protection



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 25	V
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	-20	A
	$T_C = 100^\circ\text{C}$		-13	
Pulsed Drain Current ¹		I_{DM}	-60	
Avalanche Current		I_{AS}	-33	
Avalanche Energy	$L = 0.1\text{mH}, R_G = 25\Omega$	E_{AS}	54.45	mJ
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	2.5	W
	$T_A = 100^\circ\text{C}$		1	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

100% UIS testing in condition of $V_D = 25\text{V}$, $L = 0.1\text{mH}$, $V_G = 10\text{V}$, $I_L = 20\text{A}$, Rated $V_{DS} = 30\text{V}$ P-CH

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		25	$^\circ\text{C} / \text{W}$
Junction-to-Ambient ³	$R_{\theta JA}$		50	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

³The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

⁴Guarantee by Engineering test.

ELECTRICAL CHARACTERISTICS ($T_J = 25\text{ }^{\circ}\text{C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.5	-3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
		$V_{DS} = 0V, V_{GS} = \pm 25V$			± 500	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -20V, V_{GS} = 0V, T_J = 125\text{ }^{\circ}C$			-10	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = -5V, V_{GS} = -10V$	-20			A
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -12A$		7	8.5	m Ω
		$V_{GS} = -4.5V, I_D = -9A$		12	15	
Forward Transconductance ¹	g_{fs}	$V_{DS} = -5V, I_D = -12A$		26		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -15V, f = 1MHz$		3091		pF
Output Capacitance	C_{oss}			476		
Reverse Transfer Capacitance	C_{rss}			404		
Gate Resistance	R_g	$V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz$		3.5		Ω
Total Gate Charge ^{1,2}	$Q_g(V_{GS}=10V)$	$V_{DS} = -15V, V_{GS} = -10V,$ $I_D = -12A$		54		nC
	$Q_g(V_{GS}=4.5V)$			32		
Gate-Source Charge ^{1,2}	Q_{gs}			7.3		
Gate-Drain Charge ^{1,2}	Q_{gd}			13		
Turn-On Delay Time ^{1,2}	$t_{d(on)}$	$V_{DS} = -15V, V_{GS} = -10V$ $I_D = -5A, R_g = 3\Omega$		10		nS
Rise Time ^{1,2}	t_r			15		
Turn-Off Delay Time ^{1,2}	$t_{d(off)}$			70		
Fall Time ^{1,2}	t_f			50		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _C = 25 °C)						
Continuous Current	I_S				-20	A
Pulsed Current ³	I_{SM}				-60	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0V$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_F = I_S, dI_F/dt = 100A / \mu S$		20		nS
Reverse Recovery Charge	Q_{rr}			10		nC



¹Pulse test : Pulse Width $\leq 300 \mu\text{sec}$, Duty Cycle $\leq 2\%$.

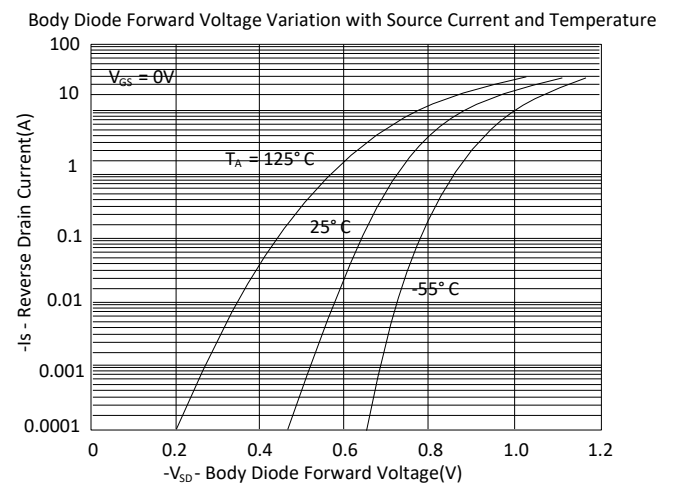
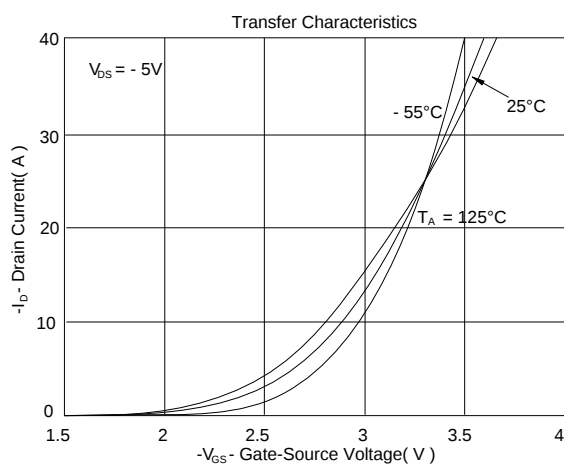
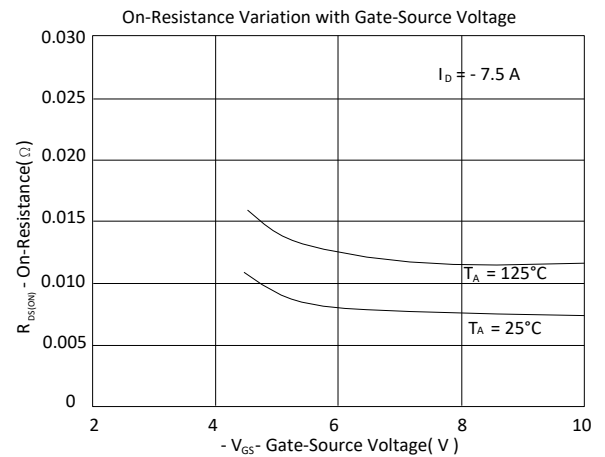
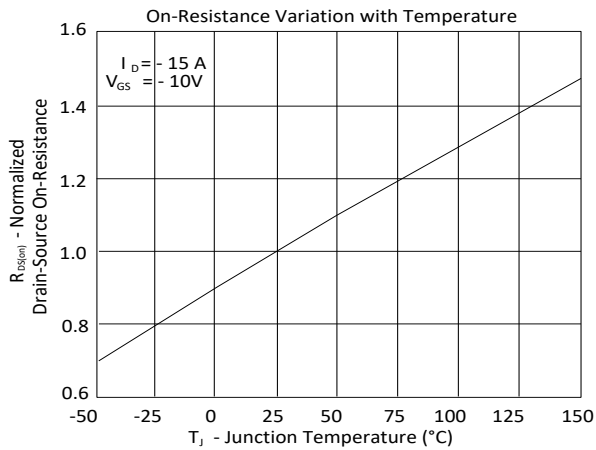
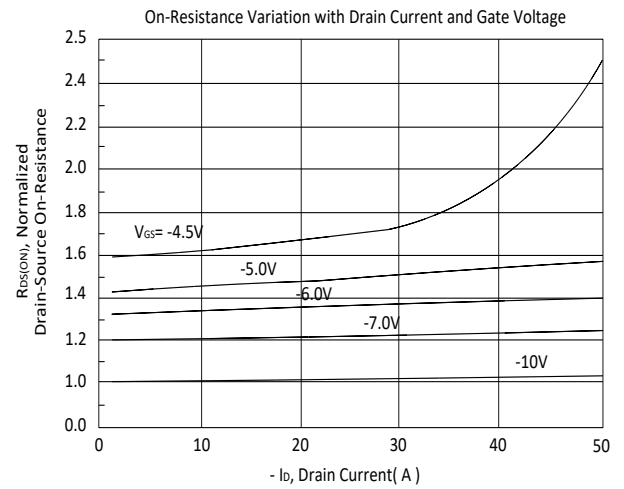
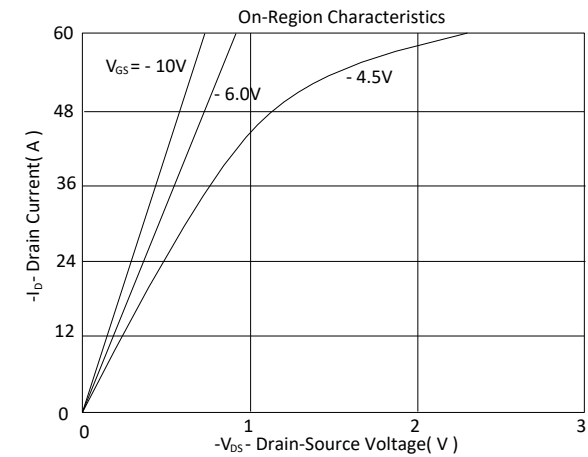
²Independent of operating temperature.

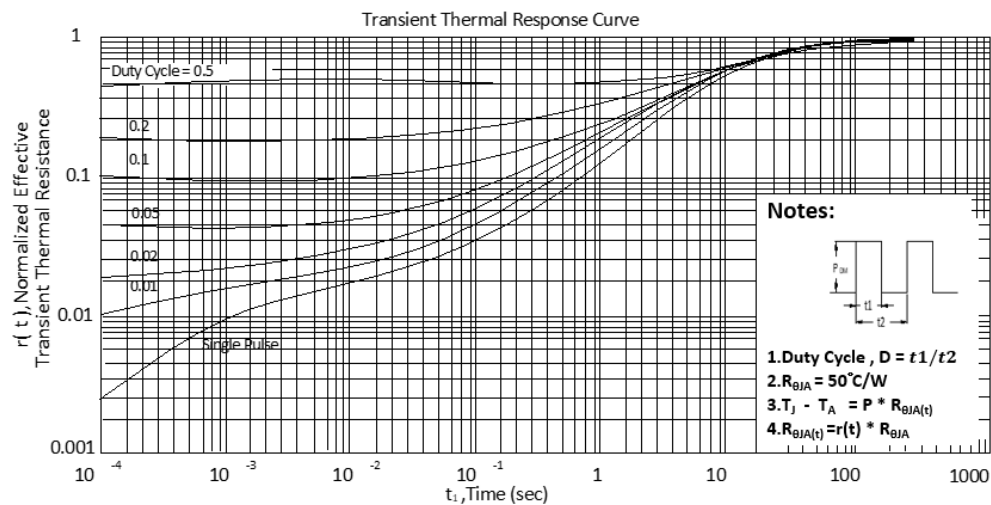
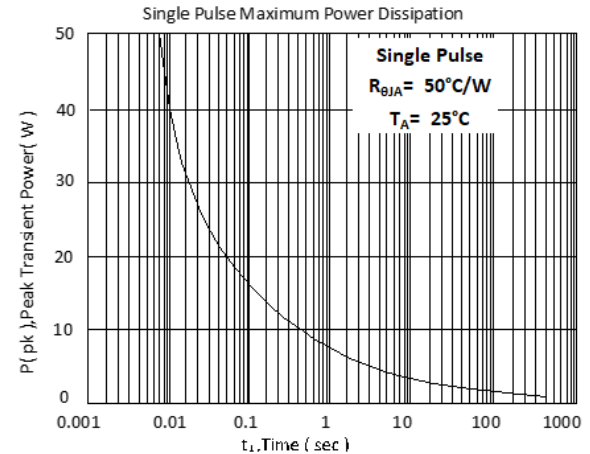
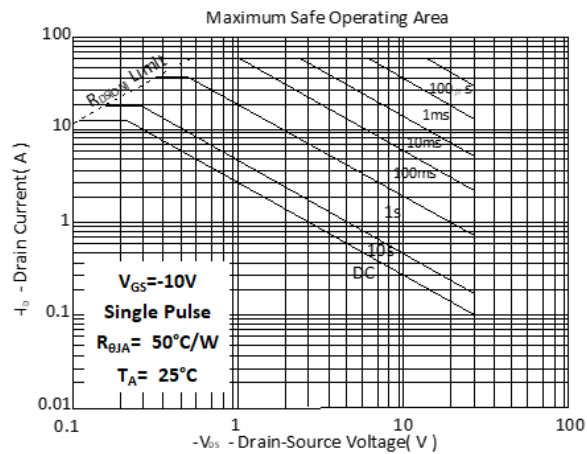
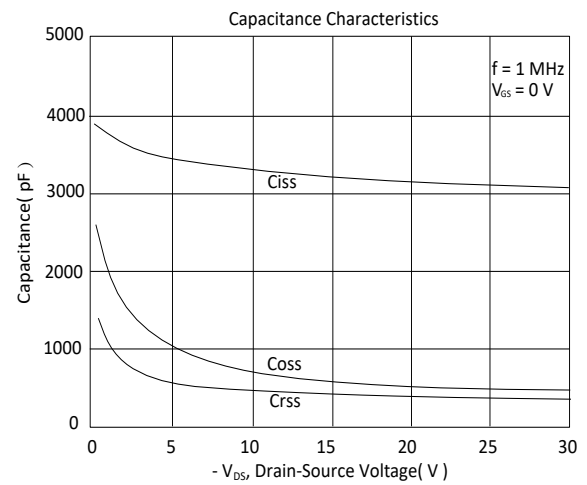
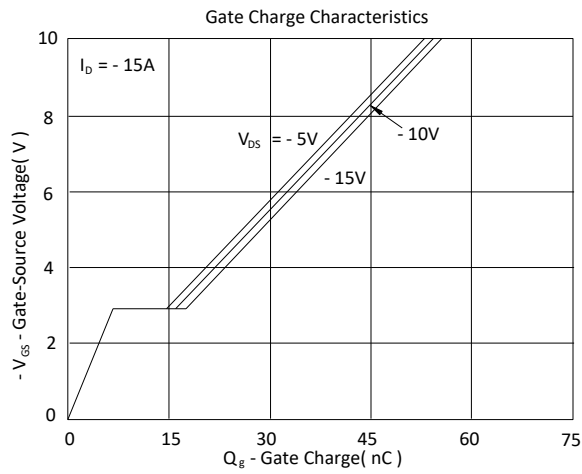
³Pulse width limited by maximum junction temperature.

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



TYPICAL CHARACTERISTICS







Ordering & Marking Information:

Device Name: EMZB08P03G for SOP-8



ZB08P03: Device Name

ABCDEFGH: Date Code

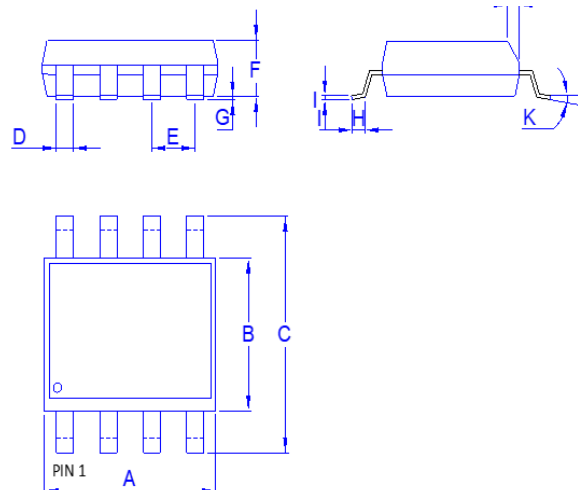
A: Assembly House

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)

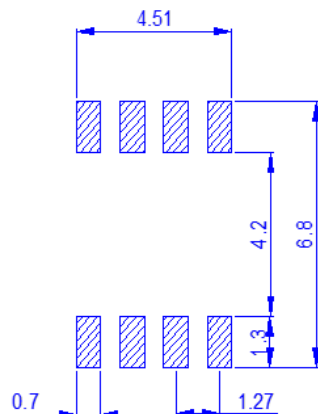
DEFG: Serial No.

Outline Drawing

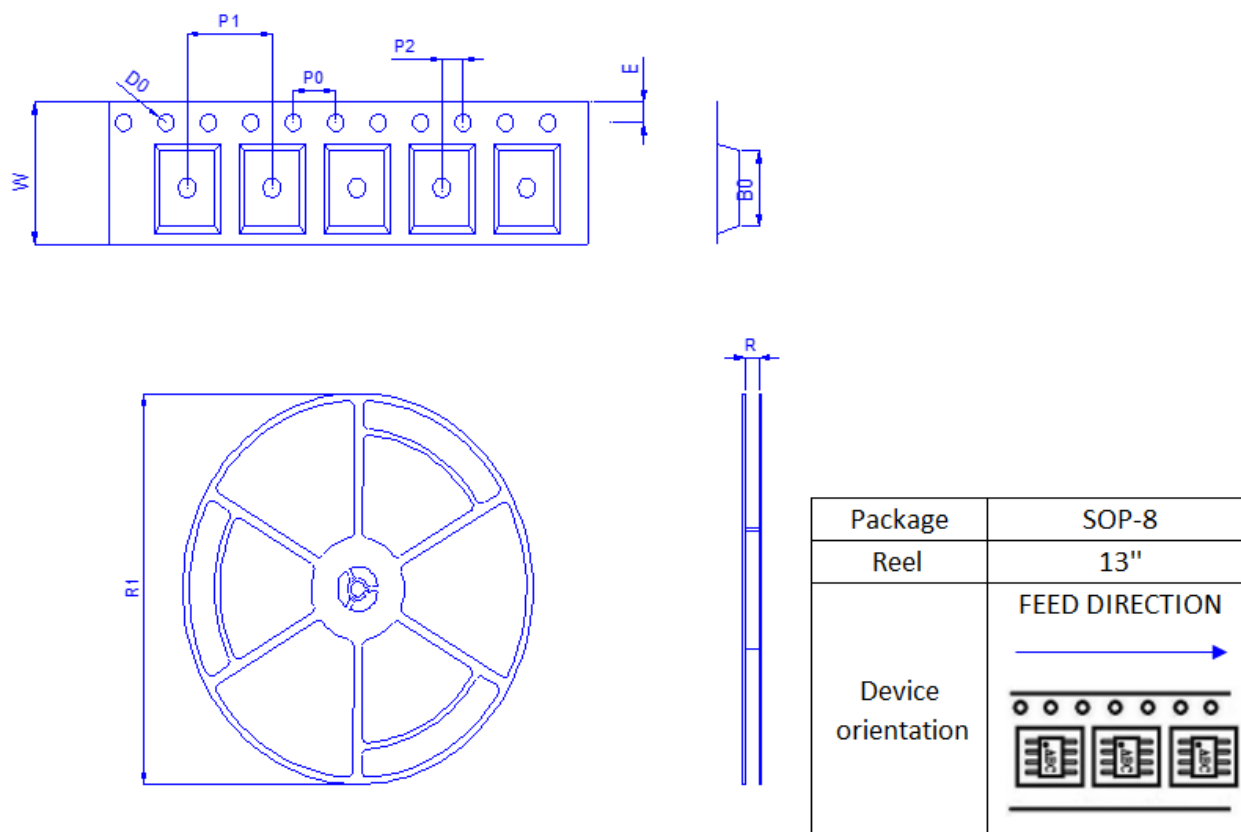


Dimension	A	B	C	D	E	F	G	H	I	J	K
Min.	4.70	3.80	5.80	0.31		1.35	0.01	0.40	0.10	0.25	0°
Typ.	4.90	3.90	6.00	0.41	1.27	1.55	0.18	0.60	0.20	0.30	
Max.	5.10	4.00	6.20	0.51		1.75	0.25	1.27	0.25	0.50	8°

Footprint



◆Tape&Reel Information:2500pcs/Reel



Dimension in mm

Dimension	Carrier tape							Reel	
	B0	D0	E	P0	P1	P2	W	R	R1
Typ.	6.5	1.5	1.75	4	8	2	12	12.4	330
±	0.4	0.2	0.2	0.2	0.2	0.2	0.5	REF	REF