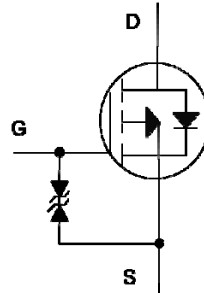


P-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	-20V
$R_{DS(on)}$ (MAX.)	44m Ω
I_D	-4A



Pb-Free Lead Plating & Halogen Free

ESD Protection – up to 2KV HBM



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 8	V
Continuous Drain Current	$T_A = 25\text{ }^\circ\text{C}$	I_D	-4	A
	$T_A = 70\text{ }^\circ\text{C}$		-3.5	
Pulsed Drain Current ¹		I_{DM}	-16	
Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	P_D	1.25	W
	$T_A = 70\text{ }^\circ\text{C}$		0.8	
Operating Junction & Storage Temperature Range		T_{j}, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Ambient ³	$R_{\theta JA}$		100	$^\circ\text{C}/\text{W}$
Junction-to-Lead ⁴	$R_{\theta JL}$		55	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

³100 $^\circ\text{C}/\text{W}$ when mounted on a 1 in² pad of 2 oz copper.

⁴ $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.3	-0.65	-1.0	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -16V, V_{GS} = 0V, T_J = 125\text{ }^\circ\text{C}$			-10	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = -5V, V_{GS} = -4.5V$	-4			A
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = -4.5V, I_D = -4A$		37	44	m Ω
		$V_{GS} = -2.5V, I_D = -3A$		55	70	
		$V_{GS} = -1.8V, I_D = -1A$		65	90	
Forward Transconductance ¹	g_{fs}	$V_{DS} = -5V, I_D = -4A$		14		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -10V, f = 1MHz$		1059		pF
Output Capacitance	C_{oss}			132		
Reverse Transfer Capacitance	C_{rss}			127		
Total Gate Charge ^{1,2}	Q_g	$V_{DS} = -10V, V_{GS} = -4.5V,$ $I_D = -4A$		12.9		nC
Gate-Source Charge ^{1,2}	Q_{gs}			1.8		
Gate-Drain Charge ^{1,2}	Q_{gd}			3.2		
Turn-On Delay Time ^{1,2}	$t_{d(on)}$	$V_{DS} = -10V,$ $I_D = -1A, V_{GS} = -4.5V, R_{GS} = 6\Omega$		15		nS
Rise Time ^{1,2}	t_r			30		
Turn-Off Delay Time ^{1,2}	$t_{d(off)}$			35		
Fall Time ^{1,2}	t_f			35		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$)						
Continuous Current	I_S				-3	A
Pulsed Current ³	I_{SM}				-12	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0V$			-1.2	V

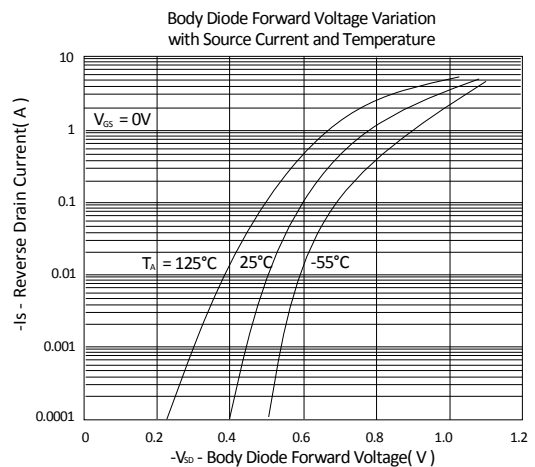
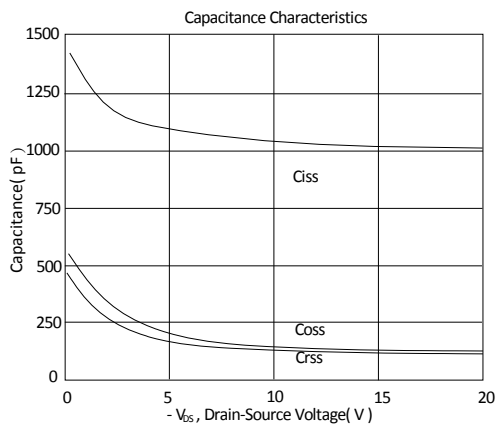
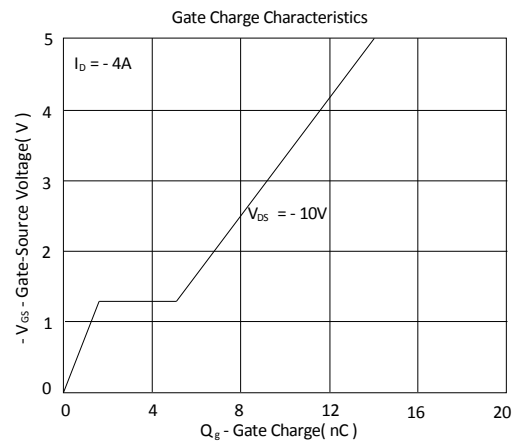
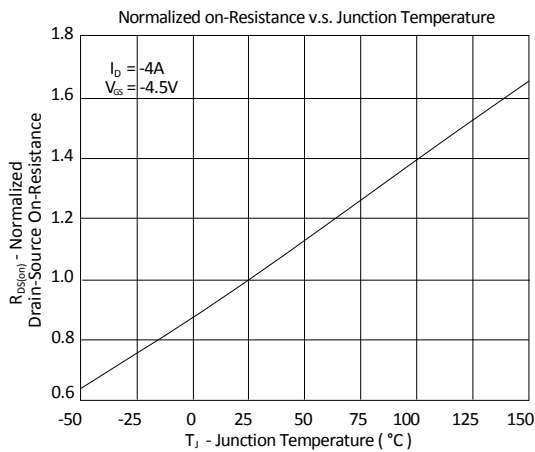
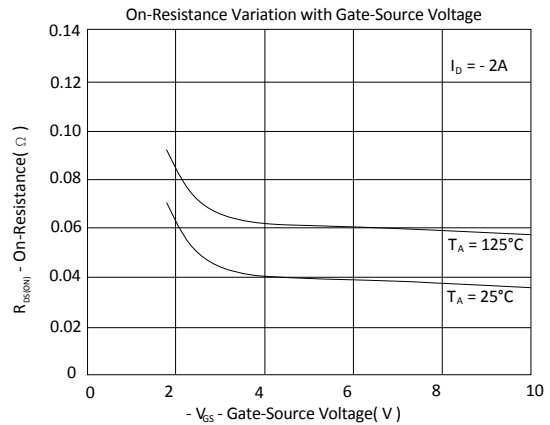
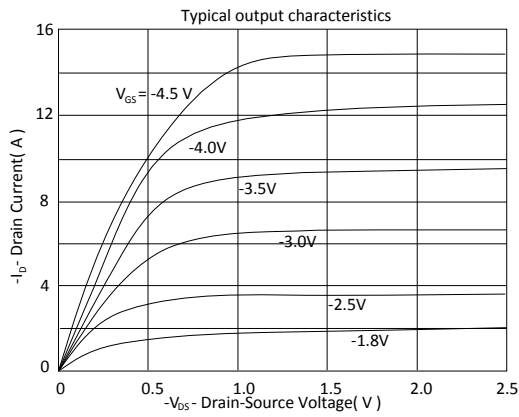
¹Pulse test : Pulse Width $\leq 300\ \mu\text{sec}$, Duty Cycle $\leq 2\%$.

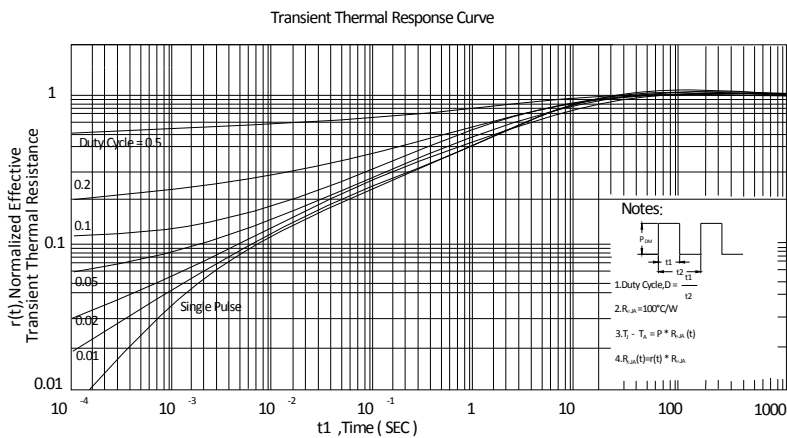
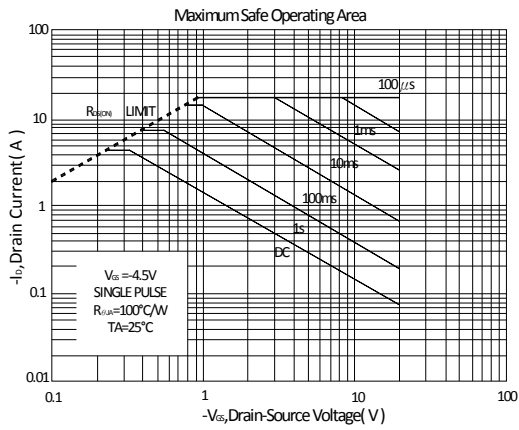
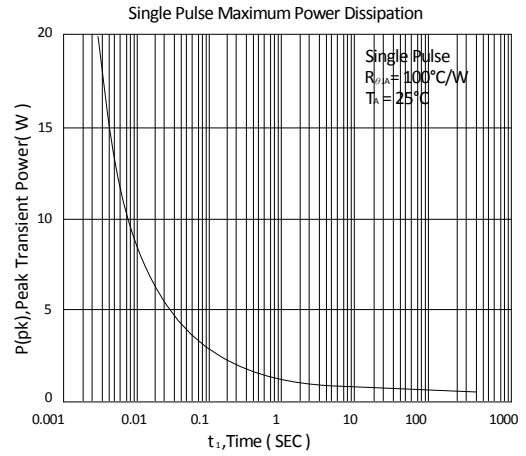
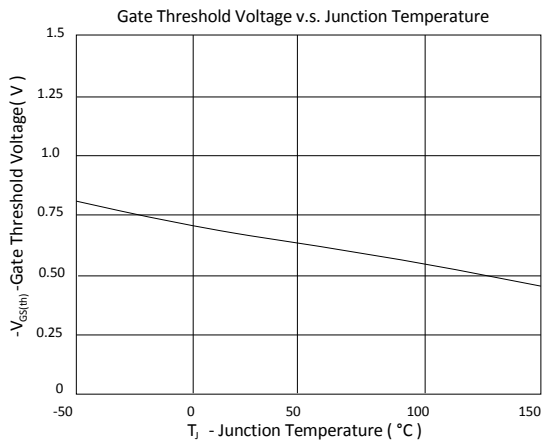
²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.



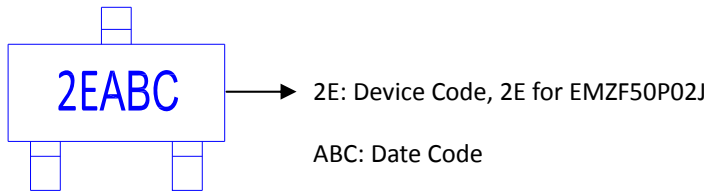
TYPICAL CHARACTERISTICS



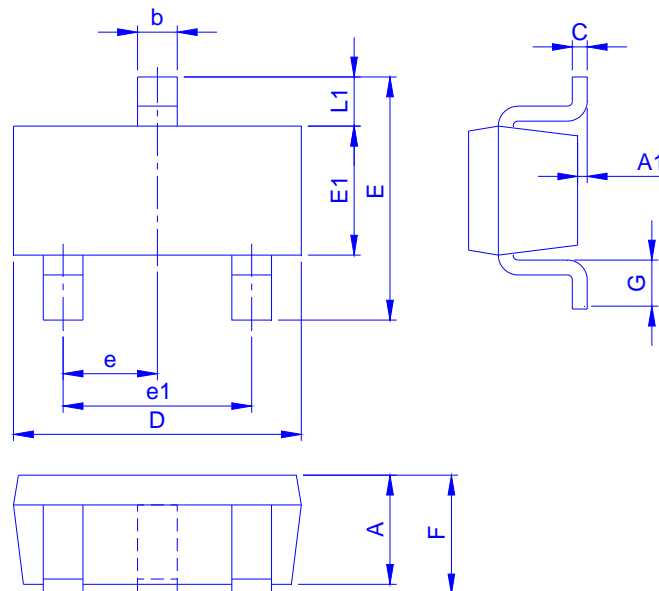


Ordering & Marking Information:

Device Name: EMZF50P02J for SOT-23



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

