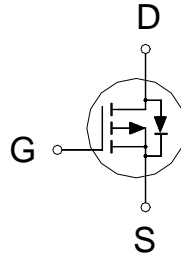


P-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	-30V
$R_{DS(on) (MAX.)}$	50m Ω
I_D	-4.5A



Pb-Free Lead Plating & Halogen Free



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_A = 25\text{ }^\circ\text{C}$	I_D	-4.5	A
	$T_A = 70\text{ }^\circ\text{C}$		-3.5	
Pulsed Drain Current ¹		I_{DM}	-18	
Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	P_D	1.25	W
	$T_A = 70\text{ }^\circ\text{C}$		0.83	
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	$R_{\theta JA}$		100	$^\circ\text{C} / \text{W}$

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

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	-4.5			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = -10V, I _D = -4.5A		42	50	mΩ
		V _{GS} = -4.5V, I _D = -3.5A		66	85	
Forward Transconductance ¹	g _{fs}	V _{DS} = -5V, I _D = -4.5A		16		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -15V, f = 1MHz		820		pF
Output Capacitance	C _{oss}			122		
Reverse Transfer Capacitance	C _{rss}			97		
Total Gate Charge ^{1,2}	Q _g	V _{DS} = -15V, V _{GS} = -10V, I _D = -4.5A		9		nC
Gate-Source Charge ^{1,2}	Q _{gs}			2.2		
Gate-Drain Charge ^{1,2}	Q _{gd}			2.5		
Turn-On Delay Time ^{1,2}	t _{d(on)}	V _{DS} = -15V, I _D = -1A, V _{GS} = -10V, R _{GS} = 6Ω		12		nS
Rise Time ^{1,2}	t _r			16		
Turn-Off Delay Time ^{1,2}	t _{d(off)}			34		
Fall Time ^{1,2}	t _f			20		
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 , V _{GS} = 0V			-1.2	V

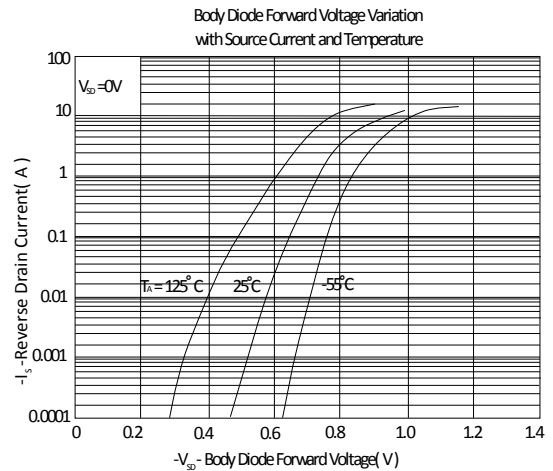
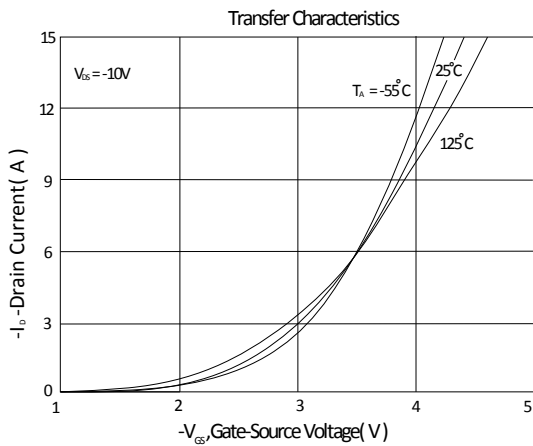
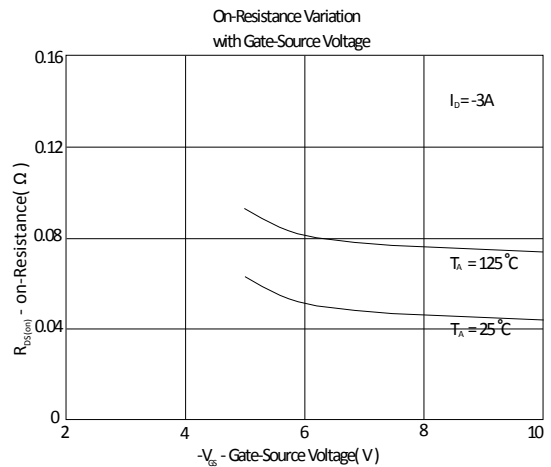
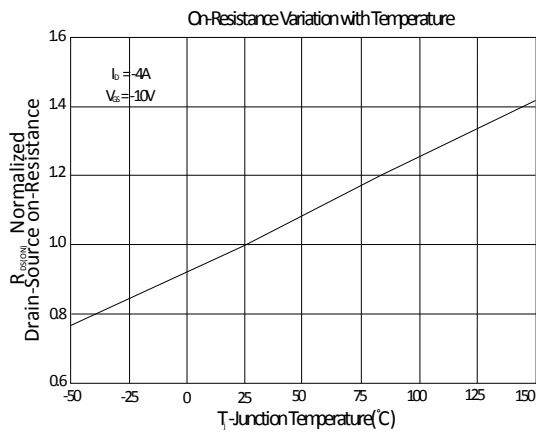
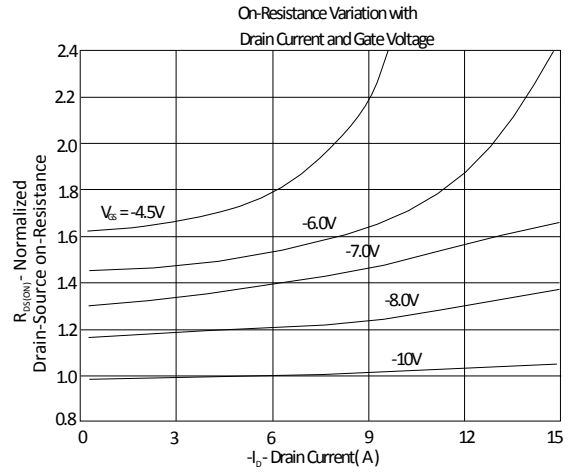
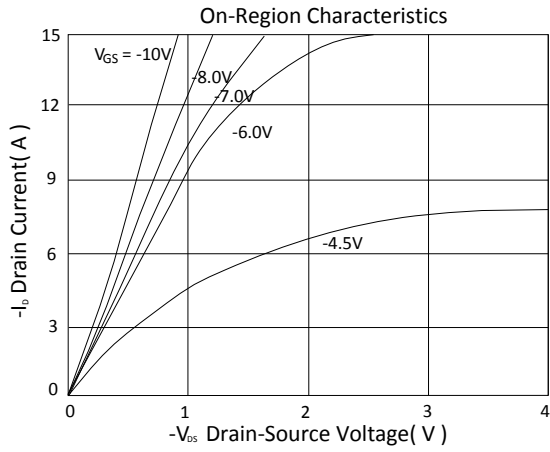
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

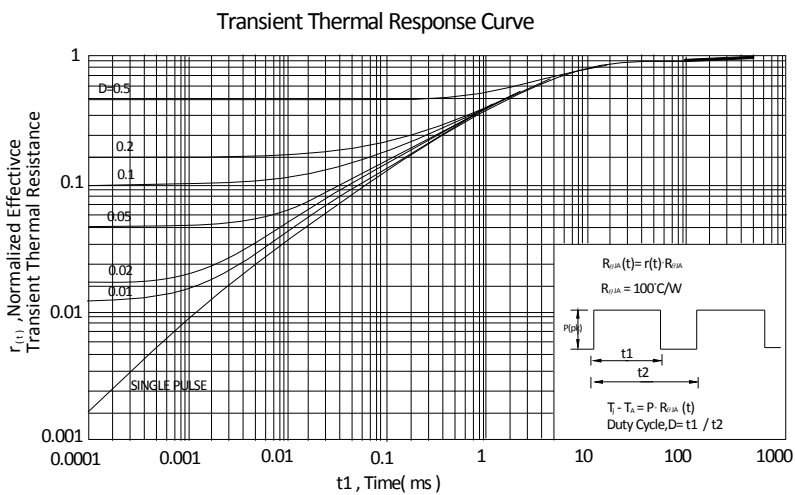
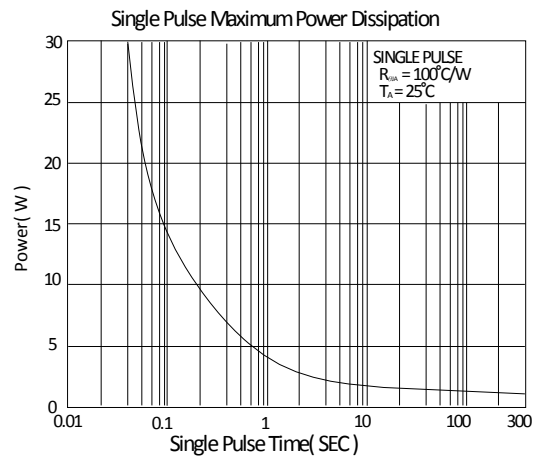
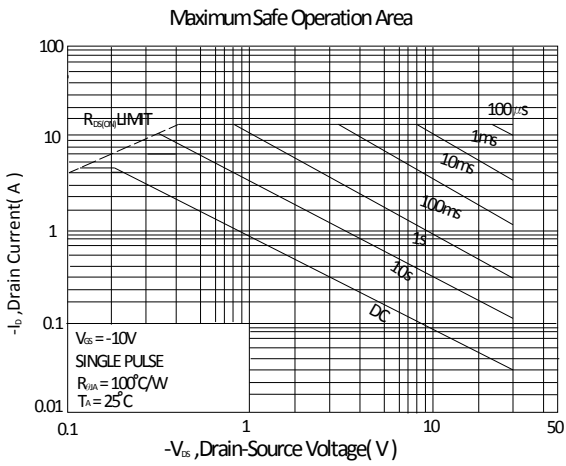
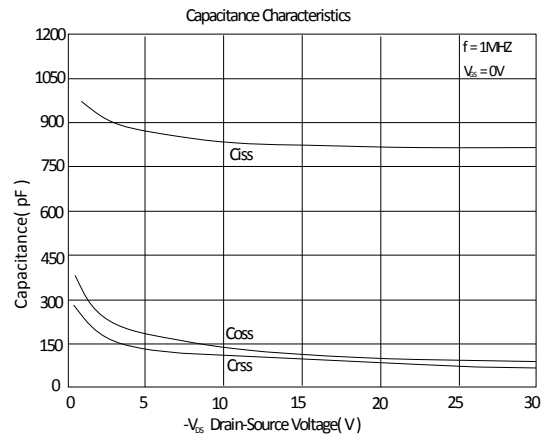
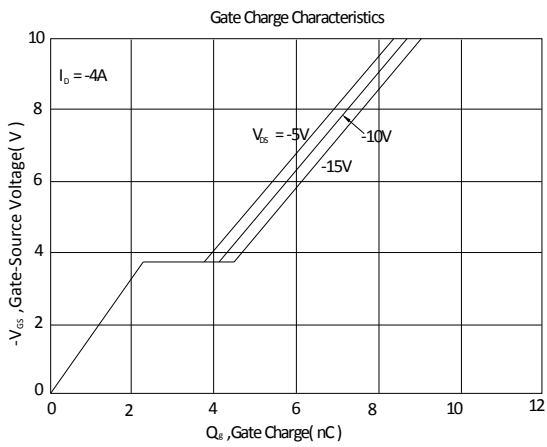
²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.



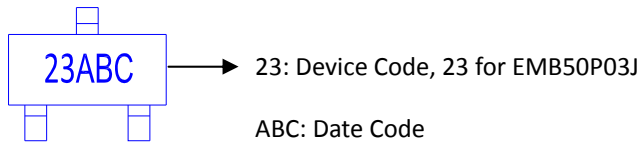
TYPICAL CHARACTERISTICS



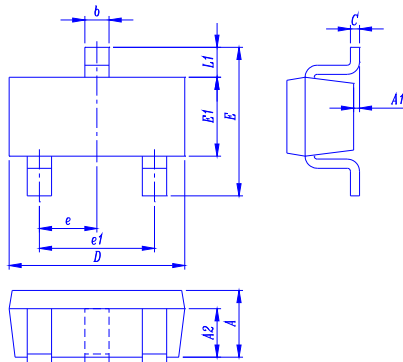


Ordering & Marking Information:

Device Name: EMB50P03J for SOT-23



Outline Drawing



Dimension in mm

Dimension	A	A1	A2	b	C	D	E	E1	e	e1	L1
Min.	0.85	0		0.30	0.08	2.75	2.6	1.35			0.35
Typ.			0.80						0.95	1.90	
Max.	1.25	0.13		0.50	0.20	3.10	3.0	1.80			0.75

Footprint

