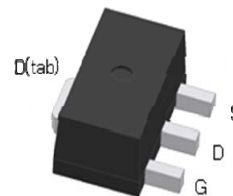
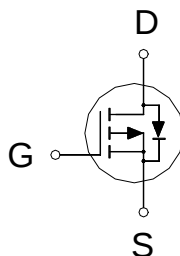


P-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	-30V
$R_{DS(on)} (MAX.)$	20m Ω
I_D	-8A



Pb-Free Lead Plating & Halogen Free



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 25	V
Continuous Drain Current	$T_C = 25\text{ }^{\circ}\text{C}$	I_D	-8	A
	$T_C = 100\text{ }^{\circ}\text{C}$		-6	
Pulsed Drain Current ¹		I_{DM}	-32	
Power Dissipation	$T_A = 25\text{ }^{\circ}\text{C}$	P_D	1.47	W
	$T_A = 100\text{ }^{\circ}\text{C}$		0.58	
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-Case	$R_{\theta JC}$		18	$^{\circ}\text{C} / \text{W}$
Junction-to-Ambient ³	$R_{\theta JA}$		85	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

³85 $^{\circ}\text{C} / \text{W}$ when mounted on a 1 in² pad of 2 oz copper.

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$, 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 = -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
		V _{DS} = 0V, V _{GS} = ±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 °C			-10	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = -5V, V _{GS} = -10V	-18			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = -10V, I _D = -8A		17.5	20	mΩ
		V _{GS} = -4.5V, I _D = -5A		26	35	
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		4.7		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)			9.8		
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				-3.5	A
Pulsed Current ³	I _{SM}				-14	
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

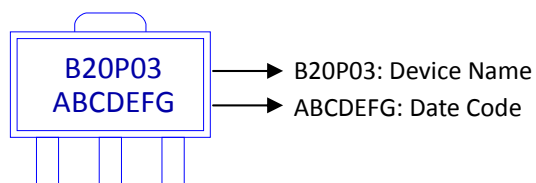
¹Pulse test : Pulse Width $\leq 300 \mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

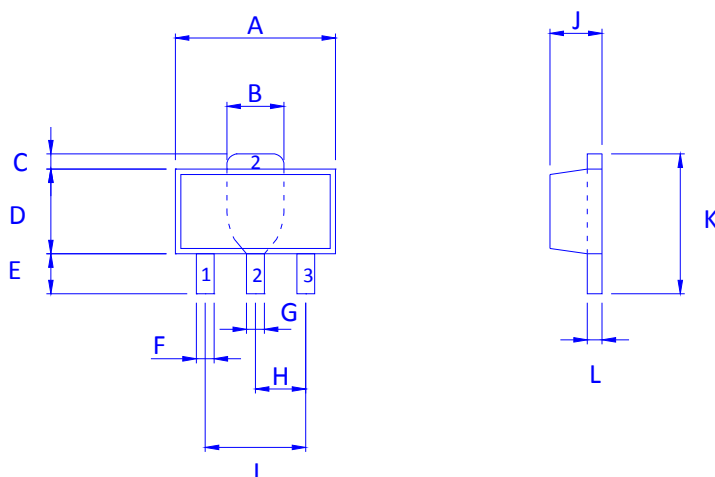
³Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: EMB20P03P for SOT-89



Outline Drawing



Dimension in mm

Dimension	A	B	C	D	E	F	G	H	I	J	K	L
in.	4.30	1.60	0.40	2.40	0.80	0.40	0.40	1.40	2.80	1.30	3.80	0.30
Typ.												
Max.	4.70	1.80	0.60	2.60	1.40	0.50	0.60	1.60	3.20	1.70	4.60	0.50

Footprint

