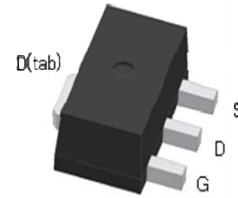


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	20V
$R_{DS(on)} (MAX.)$	30m Ω
I_D	5A



Pb-Free Lead Plating & Halogen Free



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current	$T_A = 25^\circ\text{C}$	I_D	5	A
	$T_A = 70^\circ\text{C}$		3.75	
Pulsed Drain Current ¹		I_{DM}	20	
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	1.47	W
	$T_A = 70^\circ\text{C}$		0.94	
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_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	20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.45	0.75	1.2	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±12V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16V, V _{GS} = 0V			1	μA
		V _{DS} = 16V, V _{GS} = 0V, T _J = 125 °C			10	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 5V, V _{GS} = 4.5V	5			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 5A		26	30	mΩ
		V _{GS} = 2.5V, I _D = 4A		45	51	
		V _{GS} = 1.8V, I _D = 2A		56	80	
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 5A		7		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 10V, f = 1MHz		280		pF
Output Capacitance	C _{oss}			47		
Reverse Transfer Capacitance	C _{rss}			38		
Total Gate Charge ^{1,2}	Q _g	V _{DS} = 10V, V _{GS} = 4.5V, I _D = 5A		6.2		nC
Gate-Source Charge ^{1,2}	Q _{gs}			0.9		
Gate-Drain Charge ^{1,2}	Q _{gd}			2.1		
Turn-On Delay Time ^{1,2}	t _{d(on)}	V _{DS} = 10V, I _D = 1A, V _{GS} = 4.5V, R _{GS} = 6Ω		12		nS
Rise Time ^{1,2}	t _r			15		
Turn-Off Delay Time ^{1,2}	t _{d(off)}			30		
Fall Time ^{1,2}	t _f			13		
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

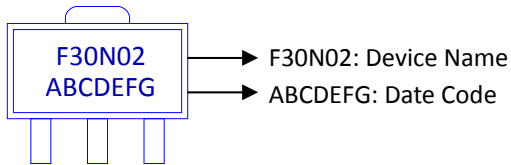
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

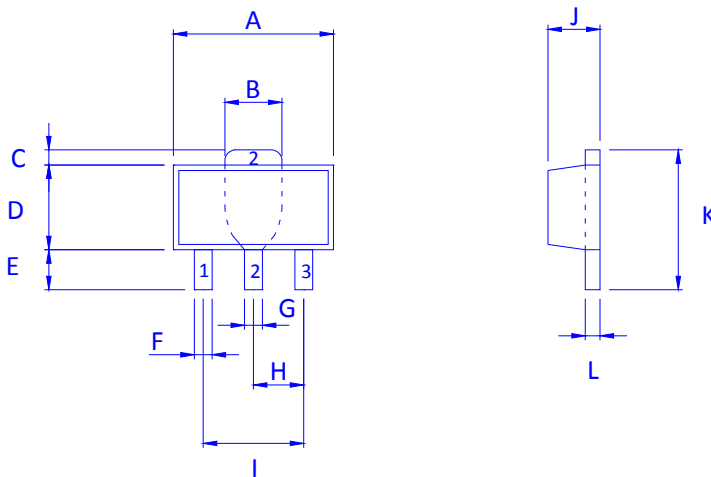
³Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: EMF30N02P for SOT-89



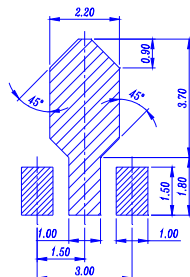
Outline Drawing



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





TYPICAL CHARACTERISTICS

