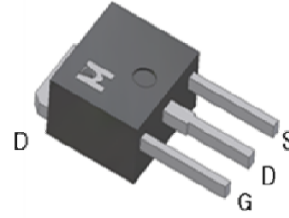
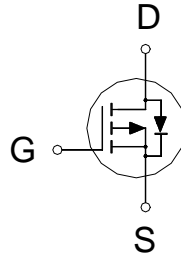


P-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	-60V
$R_{DS(on)}$ (MAX.)	90m Ω
I_D	-10A



UIS, Rg 100% Tested

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}	± 20	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	I_D	-10	A
	$T_C = 100\text{ }^\circ\text{C}$		-7	
Pulsed Drain Current ¹		I_{DM}	-40	
Avalanche Current		I_{AS}	-10	
Avalanche Energy	$L = 0.1\text{mH}, I_D = -10\text{A}, R_G = 25\Omega$	E_{AS}	5	mJ
Repetitive Avalanche Energy ²	$L = 0.05\text{mH}$	E_{AR}	2	
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	27	W
	$T_C = 100\text{ }^\circ\text{C}$		11	
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	$R_{\theta JC}$		4.5	$^\circ\text{C}/\text{W}$
Junction-to-Ambient	$R_{\theta JA}$		85	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$



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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.8	-3.0	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -48V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -40V, V_{GS} = 0V, T_J = 125\text{ }^\circ\text{C}$			-25	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = -5V, V_{GS} = -4.5V$	-10			A
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -10A$		78	90	$m\Omega$
		$V_{GS} = -4.5V, I_D = -8A$		110	140	
Forward Transconductance ¹	g_{fs}	$V_{DS} = -5V, I_D = -10A$		9		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -25V, f = 1MHz$		963		pF
Output Capacitance	C_{oss}			76		
Reverse Transfer Capacitance	C_{rss}			61		
Gate Resistance	R_g	$V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz$		6.8		Ω
Total Gate Charge ^{1,2}	Q_g	$V_{DS} = -30V, V_{GS} = -10V, I_D = -10A$		16.2		nC
Gate-Source Charge ^{1,2}	Q_{gs}			2.0		
Gate-Drain Charge ^{1,2}	Q_{gd}			3.5		
Turn-On Delay Time ^{1,2}	$t_{d(on)}$	$V_{DS} = -10V, I_D = -1A, V_{GS} = -10V, R_{GS} = 6\Omega$		8		nS
Rise Time ^{1,2}	t_r			12		
Turn-Off Delay Time ^{1,2}	$t_{d(off)}$			20		
Fall Time ^{1,2}	t_f			12		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_c = 25\text{ }^\circ\text{C}$)						
Continuous Current	I_S				-10	A
Pulsed Current ³	I_{SM}				-40	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0V$			1.3	V
Reverse Recovery Time	t_{rr}	$I_F = -5A, di_F/dt = 100A/\mu S$		12		nS
Reverse Recovery Charge	Q_{rr}			9		nC

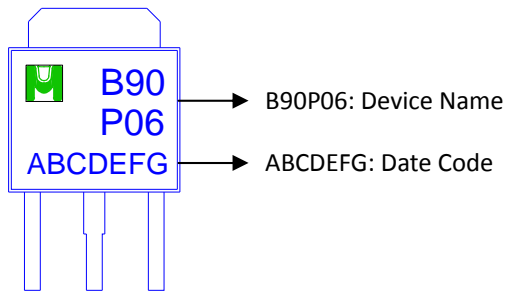
¹Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

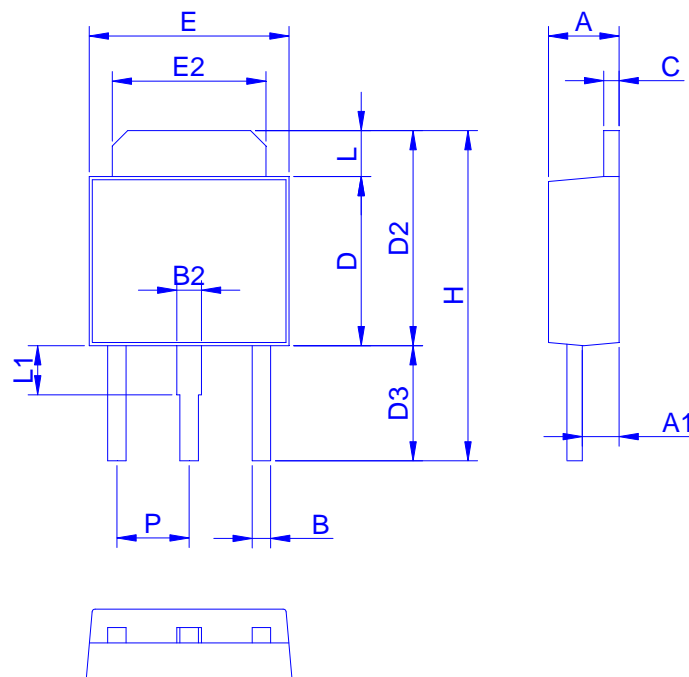
³Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: EMB90P06CS for IPAK (TO-251)



Outline Drawing



Dimension in mm

Dimension	A	A1	B	B2	C	D	D2	D3	E	E2	H	L	L1	P
Min.	2.10	0.90	0.40	0.60	0.40	5.30	6.70	3.40	6.30	4.80	10.2	0.89	0.90	2.10
Max.	2.50	1.50	0.90	1.15	0.60	6.25	7.30	4.30	6.80	5.50	11.5	1.40	1.80	2.50

TYPICAL CHARACTERISTICS

