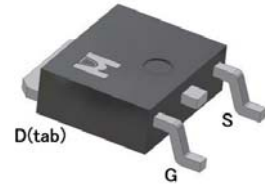


P-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	-30V
$R_{DSON (MAX.)}$	9m Ω
I_D	-75A



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}	± 25	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	I_D	-75	A
	$T_C = 100\text{ }^\circ\text{C}$		-50	
Pulsed Drain Current ¹		I_{DM}	-160	
Avalanche Current		I_{AS}	-20	
Avalanche Energy	$L = 0.1\text{mH}, I_D = -20\text{A}, R_G = 25\Omega$	E_{AS}	20	mJ
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	78	W
	$T_C = 100\text{ }^\circ\text{C}$		31	
Operating Junction & Storage Temperature Range		T_{j}, T_{stg}	-55 to 175	$^\circ\text{C}$

100% UIS testing in condition of $V_D = -15\text{V}, L = 0.1\text{mH}, V_G = -10\text{V}, I_L = -15\text{A}$, Rated $V_{DS} = -30\text{V P-CH}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		1.6	$^\circ\text{C}/\text{W}$
Junction-to-Ambient ³	$R_{\theta JA}$		62.5	

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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.5	-3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
		$V_{DS} = 0V, V_{GS} = \pm 25V$			± 500	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -20V, V_{GS} = 0V, T_J = 125\text{ }^\circ\text{C}$			-10	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = -5V, V_{GS} = -10V$	-75			A
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -25A$		8.2	9	m Ω
		$V_{GS} = -4.5V, I_D = -10A$		13.5	17	
Forward Transconductance ¹	g_{fs}	$V_{DS} = -5V, I_D = -25A$		24		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -15V, f = 1MHz$		3067		pF
Output Capacitance	C_{oss}			453		
Reverse Transfer Capacitance	C_{rss}			398		
Gate Resistance	R_g	$V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz$		3.0		Ω
Total Gate Charge ^{1,2}	Q_g	$V_{DS} = -15V, V_{GS} = -10V,$ $I_D = -25A$		52		nC
Gate-Source Charge ^{1,2}	Q_{gs}			6.5		
Gate-Drain Charge ^{1,2}	Q_{gd}			10		
Turn-On Delay Time ^{1,2}	$t_{d(on)}$	$V_{DS} = -15V,$ $I_D = -1A, V_{GS} = -10V, R_{GS} = 2.7\Omega$		20		nS
Rise Time ^{1,2}	t_r			18		
Turn-Off Delay Time ^{1,2}	$t_{d(off)}$			55		
Fall Time ^{1,2}	t_f			10		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_c = 25\text{ }^\circ\text{C}$)						
Continuous Current	I_S				-75	A
Pulsed Current ³	I_{SM}				-160	
Forward Voltage ¹	V_{SD}	$I_F = -24A, V_{GS} = 0V$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_F = I_S, di_F/dt = 100A / \mu S$		47		nS
Reverse Recovery Charge	Q_{rr}			43		nC

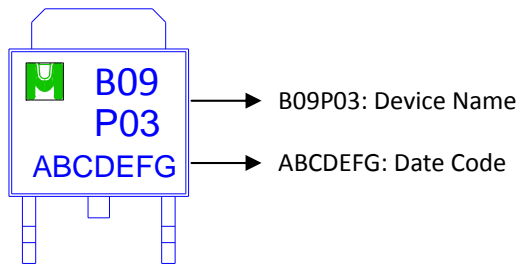
¹Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

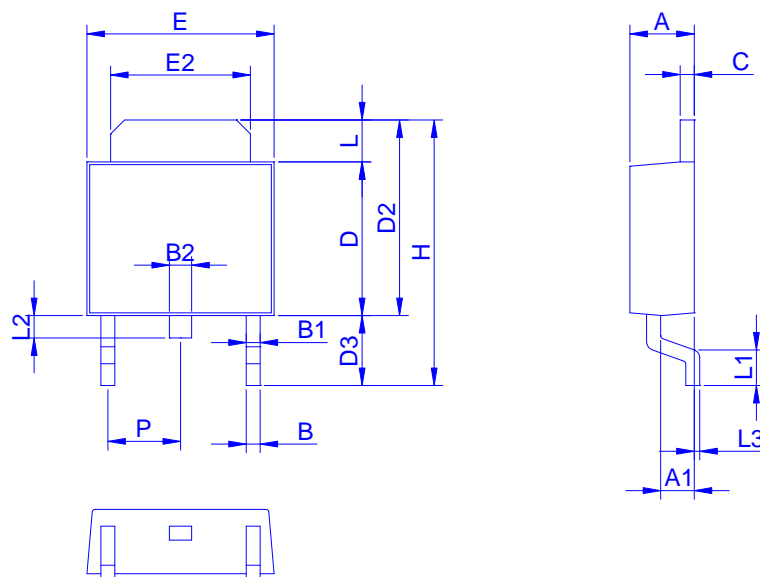
³Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: EMB09P03A for DPAK (TO-252)



Outline Drawing



Dimension in mm

Dimension	A	A1	B	B1	B2	C	D	D2	D3	E	E2	H	L	L1	L2	L3	P
Min.	2.10	0.95	0.30	0.40	0.60	0.40	5.30	6.70	2.20	6.40	4.80	9.20	0.89	0.90	0.50	0.00	2.10
Max.	2.50	1.30	0.85	0.94	1.00	0.60	6.20	7.30	3.00	6.70	5.45	10.15	1.70	1.65	1.10	0.30	2.50

