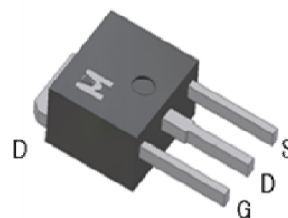


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	700V
$R_{DS(on)} (MAX.)$	2.5Ω
I_D	5A



UIS, 100% Tested

Pb-Free Lead Plating & Halogen Free



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 30	V
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	5	A
	$T_C = 100^\circ\text{C}$		3	
Pulsed Drain Current ¹		I_{DM}	20	
Avalanche Current		I_{AS}	5	mJ
Avalanche Energy	$L = 1\text{mH}, I_D = 5\text{A}, R_G = 25 \Omega$	E_{AS}	12.5	
Repetitive Avalanche Energy ²	$L = 0.5\text{mH}$	E_{AR}	6.25	
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	35	W
	$T_C = 100^\circ\text{C}$		14	
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	$R_{\theta JC}$		3.6	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		110	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

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	700			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2	3	4	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±30V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 700V, V _{GS} = 0V			20	μA
		V _{DS} = 560V, V _{GS} = 0V, T _J = 125 °C			25	
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 10V, I _D = 3A		2.2	2.5	Ω
Forward Transconductance ¹	g _{fs}	V _{DS} = 10V, I _D = 3A		9		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz		630		pF
Output Capacitance	C _{oss}			68		
Reverse Transfer Capacitance	C _{rss}			3		
Total Gate Charge ^{1,2}	Q _g	V _{DS} = 350V, V _{GS} = 15V, I _D = 3A		9.4		nC
Gate-Source Charge ^{1,2}	Q _{gs}			2.7		
Gate-Drain Charge ^{1,2}	Q _{gd}			2.9		
Turn-On Delay Time ^{1,2}	t _{d(on)}	V _{DS} = 350V, I _D = 3A, V _{GS} = 15V, R _{GS} = 10Ω		13		nS
Rise Time ^{1,2}	t _r			11		
Turn-Off Delay Time ^{1,2}	t _{d(off)}			58		
Fall Time ^{1,2}	t _f			22		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _C = 25 °C)						
Continuous Current	I _S				5	A
Pulsed Current ³	I _{SM}				20	
Forward Voltage ¹	V _{SD}	I _F = I _S , V _{GS} = 0V			1.5	V
Reverse Recovery Time	t _{rr}	I _F = I _S , dI _F /dt = 100A / μS		0.3		μS
Reverse Recovery Charge	Q _{rr}			3.0		uC

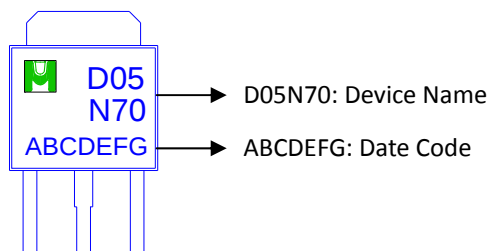
¹Pulse test : Pulse Width $\leq 300 \mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

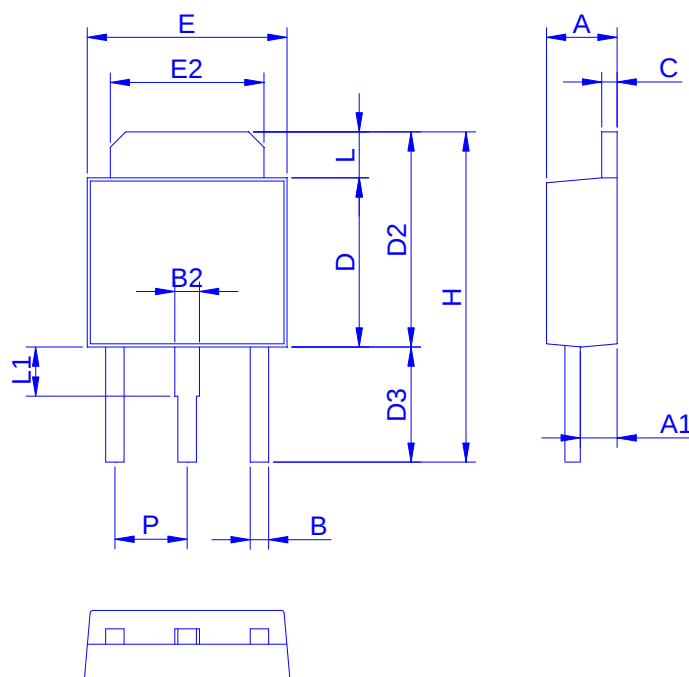
³Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: EMD05N70CS 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

