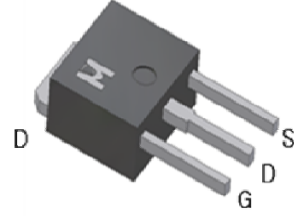
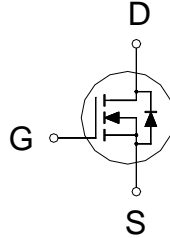


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	650V
$R_{DS(on)} (MAX.)$	2.75 Ω
I_D	4A



UIS, 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}	± 30	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	I_D	4	A
	$T_C = 100\text{ }^\circ\text{C}$		2.5	
Pulsed Drain Current ¹		I_{DM}	16	
Avalanche Current		I_{AS}	3	
Avalanche Energy	$L = 3\text{mH}, I_D = 3\text{A}, R_G = 25\text{ }\Omega$	E_{AS}	13.5	mJ
Repetitive Avalanche Energy ²	$L = 0.5\text{mH}$	E_{AR}	2.25	
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	30	W
	$T_C = 100\text{ }^\circ\text{C}$		12	
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	$R_{\theta JC}$		4.2	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		110	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$



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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	650			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	5	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 30V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 650V, V_{GS} = 0V$			10	μA
		$V_{DS} = 520V, V_{GS} = 0V, T_J = 125\text{ }^\circ\text{C}$			25	
Drain-Source On-State Resistance ¹	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 2A$		2.3	2.75	Ω
Forward Transconductance ¹	g_{fs}	$V_{DS} = 25V, I_D = 2A$		2		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		475		pF
Output Capacitance	C_{oss}			50		
Reverse Transfer Capacitance	C_{rss}			3.2		
Total Gate Charge ^{1,2}	Q_g	$V_{DS} = 300V, V_{GS} = 10V, I_D = 2A$		8.6		nC
Gate-Source Charge ^{1,2}	Q_{gs}			2.4		
Gate-Drain Charge ^{1,2}	Q_{gd}			2.3		
Turn-On Delay Time ^{1,2}	$t_{d(on)}$	$V_{DS} = 300V, I_D = 1.5A, V_{GS} = 10V, R_G = 20\Omega$		20		nS
Rise Time ^{1,2}	t_r			35		
Turn-Off Delay Time ^{1,2}	$t_{d(off)}$			20		
Fall Time ^{1,2}	t_f			40		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_c = 25\text{ }^\circ\text{C}$)						
Continuous Current	I_S				4	A
Pulsed Current ³	I_{SM}				16	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0V$			1.4	V
Reverse Recovery Time	t_{rr}	$I_F = I_S, di_F/dt = 100A / \mu S$		0.3		μS
Reverse Recovery Charge	Q_{rr}				1.0	μC

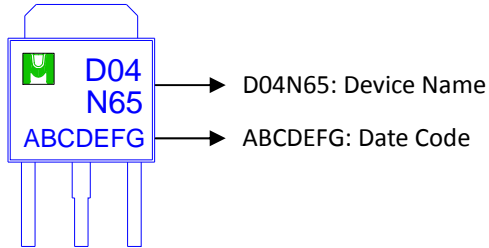
¹Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

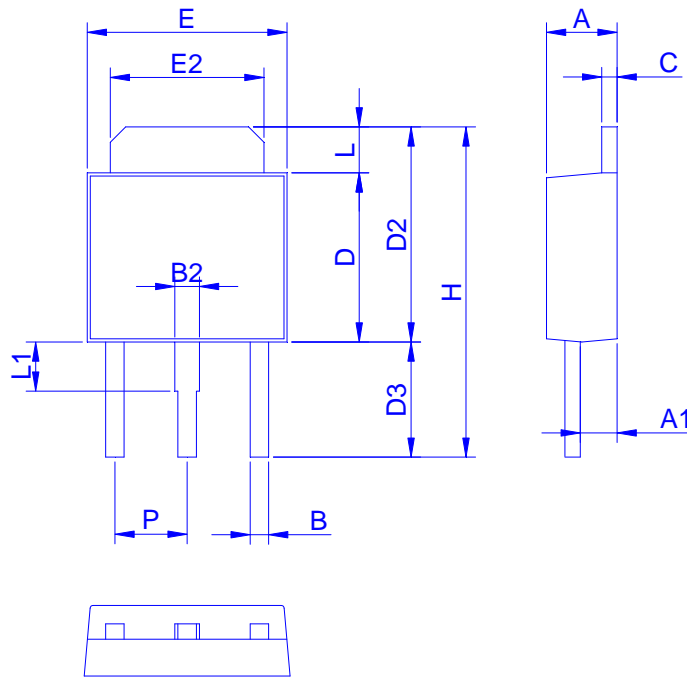
³Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: EMD04N65CS 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

