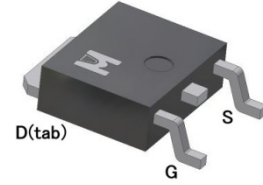


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

$BV_{DSS}$	80V
$R_{DS(on)} (MAX.)$	85m $\Omega$
$I_D$	10A



UIS, Rg 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		$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$T_C = 25^\circ\text{C}$	$I_D$	10	A
	$T_C = 100^\circ\text{C}$		7	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	40	
Avalanche Current		$I_{AS}$	12	
Avalanche Energy	$L = 0.1\text{mH}, I_D = 12\text{A}, R_G = 25\Omega$	$E_{AS}$	7.2	mJ
Repetitive Avalanche Energy <sup>2</sup>	$L = 0.05\text{mH}$	$E_{AR}$	3.6	
Power Dissipation	$T_C = 25^\circ\text{C}$	$P_D$	30	W
	$T_C = 100^\circ\text{C}$		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	$R_{\theta JA}$		62.5	

<sup>1</sup>Pulse width limited by maximum junction temperature.

<sup>2</sup>Duty cycle  $\leq 1\%$

**ELECTRICAL CHARACTERISTICS (T<sub>c</sub> = 25 °C, Unless Otherwise Noted)**

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	80			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1.0	1.7	3.0	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 64V, V <sub>GS</sub> = 0V			1	μA
		V <sub>DS</sub> = 60V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125 °C			25	
On-State Drain Current <sup>1</sup>	I <sub>D(ON)</sub>	V <sub>DS</sub> = 5V, V <sub>GS</sub> = 10V	10			A
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A		73	85	mΩ
		V <sub>GS</sub> = 5V, I <sub>D</sub> = 6A		90	110	
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 10A		10		S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 30V, f = 1MHz		620		pF
Output Capacitance	C <sub>oss</sub>			44		
Reverse Transfer Capacitance	C <sub>rss</sub>			37		
Total Gate Charge <sup>1,2</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 40V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A		12		nC
Gate-Source Charge <sup>1,2</sup>	Q <sub>gs</sub>			1.2		
Gate-Drain Charge <sup>1,2</sup>	Q <sub>gd</sub>			3.3		
Turn-On Delay Time <sup>1,2</sup>	t <sub>d(on)</sub>	V <sub>DS</sub> = 40V, I <sub>D</sub> = 1A, V <sub>GS</sub> = 10V, R <sub>GS</sub> = 6Ω		9		nS
Rise Time <sup>1,2</sup>	t <sub>r</sub>			6.5		
Turn-Off Delay Time <sup>1,2</sup>	t <sub>d(off)</sub>			12		
Fall Time <sup>1,2</sup>	t <sub>f</sub>			7.5		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>c</sub> = 25 °C)</b>						
Continuous Current	I <sub>S</sub>				10	A
Pulsed Current <sup>3</sup>	I <sub>SM</sub>				40	
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0V			1.3	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 10A, di <sub>F</sub> /dt = 100A / μS		100		nS
Reverse Recovery Charge	Q <sub>rr</sub>			480		nC

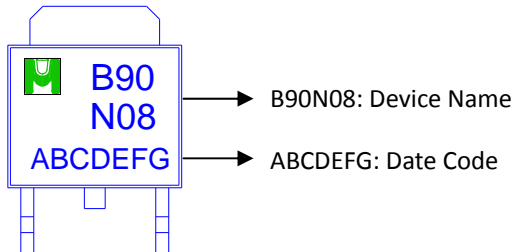
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

<sup>2</sup>Independent of operating temperature.

<sup>3</sup>Pulse width limited by maximum junction temperature.

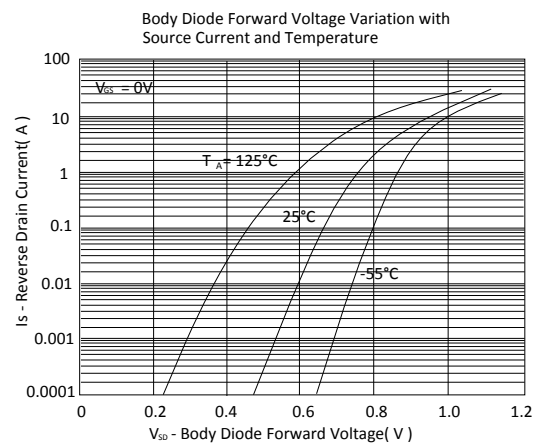
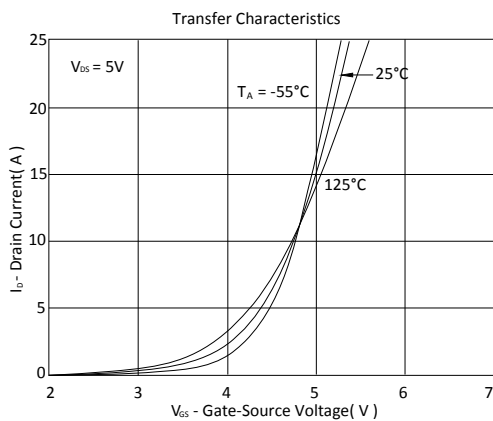
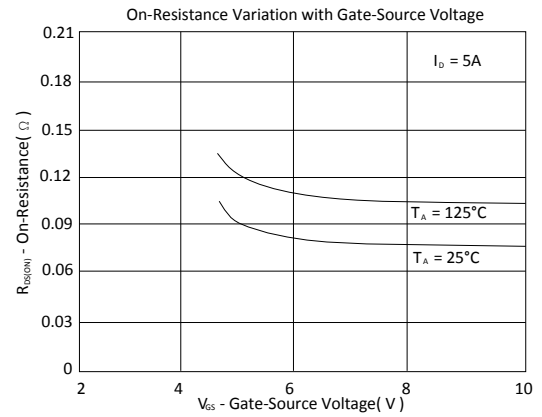
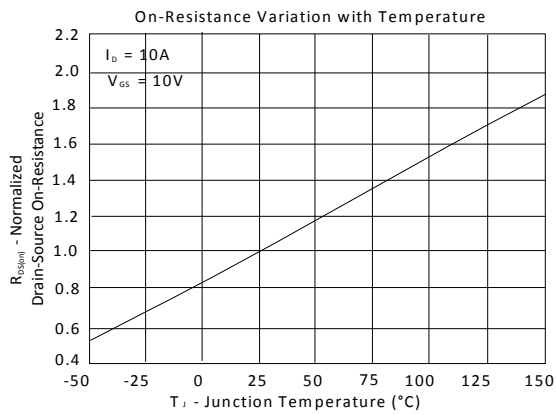
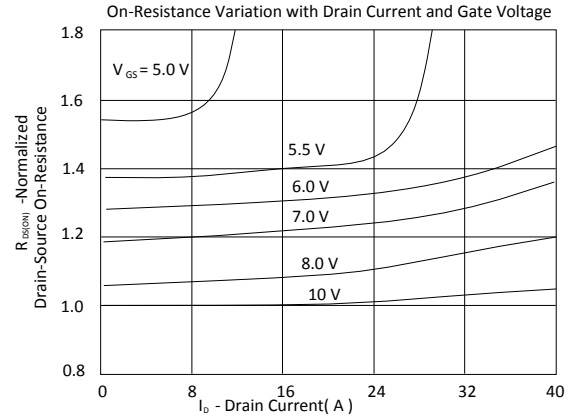
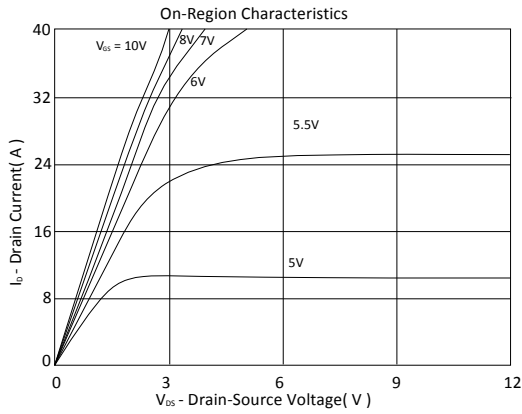
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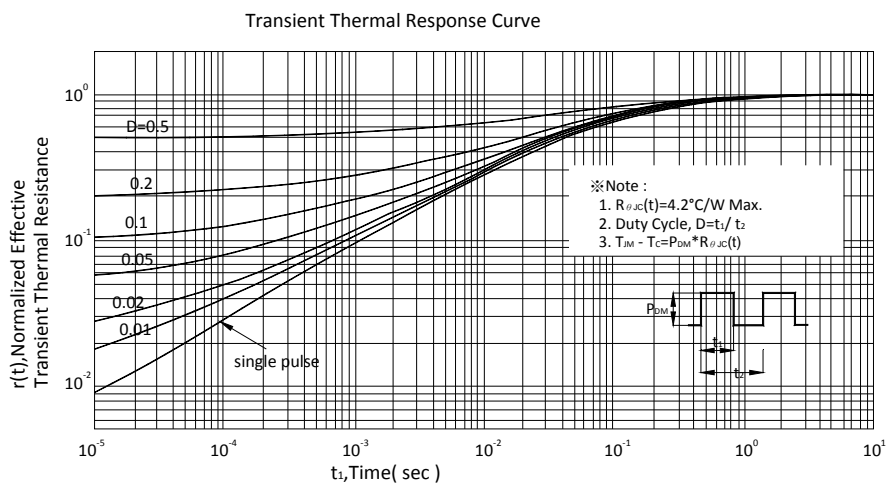
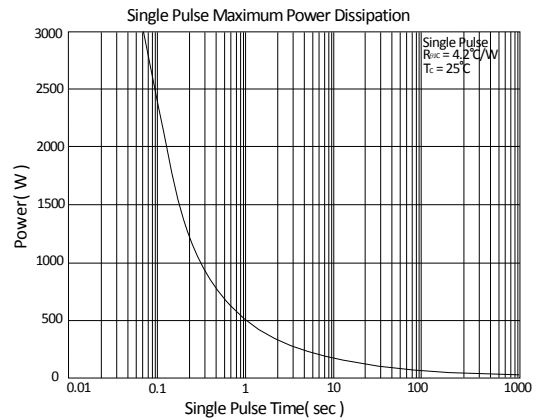
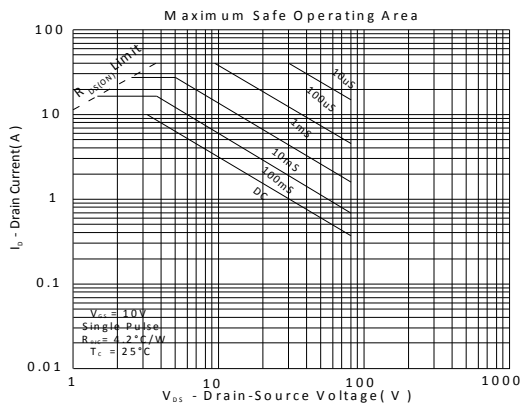
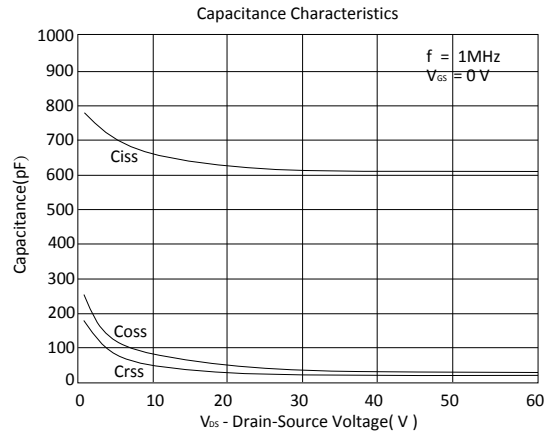
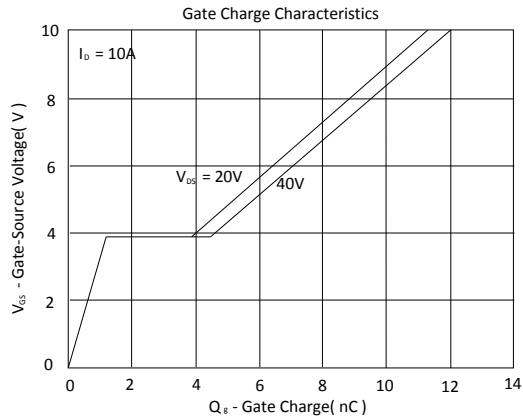
Device Name: EMB90N08A for DPAK (TO-252)





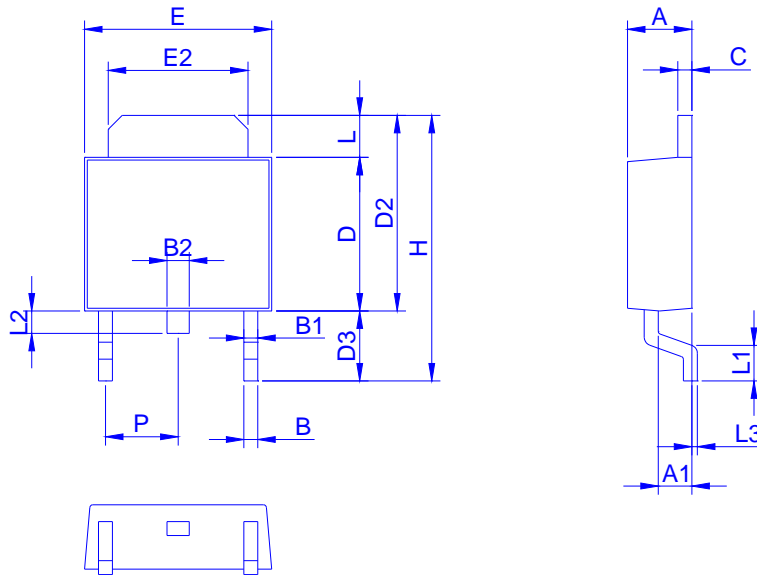
TYPICAL CHARACTERISTICS







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

Footprint

