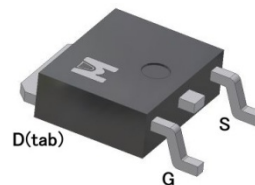
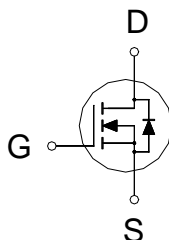


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

$BV_{DSS}$	100V
$R_{DS(on)} (MAX.)$	150m $\Omega$
$I_D$	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		$V_{GS}$	$\pm 20$	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 <sup>1</sup>		$I_{DM}$	40	
Avalanche Current		$I_{AS}$	12	mJ
Avalanche Energy	$L = 0.1\text{mH}, I_D = 12\text{A}, R_G = 25\Omega$	$E_{AS}$	7.2	
Repetitive Avalanche Energy <sup>2</sup>	$L = 0.05\text{mH}$	$E_{AR}$	3.6	
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	$R_{\theta JA}$		62.5	

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

<sup>2</sup>Duty 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 <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	100			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1.0	2.0	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> = 80V, V <sub>GS</sub> = 0V			1	μA
		V <sub>DS</sub> = 70V, 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> = 10V, 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		130	150	mΩ
		V <sub>GS</sub> = 5V, I <sub>D</sub> = 10A		150	175	
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 10A		8		S
DYNAMIC						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 25V, f = 1MHz		1030		pF
Output Capacitance	C <sub>oss</sub>			50		
Reverse Transfer Capacitance	C <sub>rss</sub>			42		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> = 15mV, V <sub>DS</sub> = 0V, f = 1MHz		1.2		Ω
Total Gate Charge <sup>1,2</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 80V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A		23		nC
Gate-Source Charge <sup>1,2</sup>	Q <sub>gs</sub>			2.3		
Gate-Drain Charge <sup>1,2</sup>	Q <sub>gd</sub>			6.1		
Turn-On Delay Time <sup>1,2</sup>	t <sub>d(on)</sub>	V <sub>DS</sub> = 50V, I <sub>D</sub> = 1A, V <sub>GS</sub> = 10V, R <sub>GS</sub> = 6Ω		12		nS
Rise Time <sup>1,2</sup>	t <sub>r</sub>			20		
Turn-Off Delay Time <sup>1,2</sup>	t <sub>d(off)</sub>			25		
Fall Time <sup>1,2</sup>	t <sub>f</sub>			25		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T <sub>c</sub> = 25 °C)						
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		35		nS
Reverse Recovery Charge	Q <sub>rr</sub>			65		nC

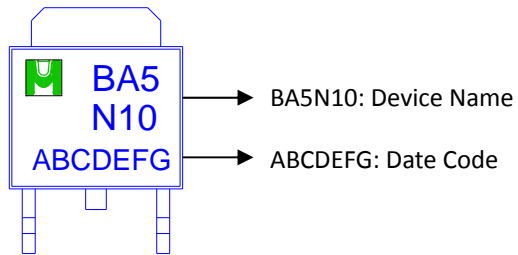
<sup>1</sup>Pulse test : Pulse Width  $\leq 300\mu\text{sec}$ , Duty Cycle  $\leq 2\%$ .

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

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

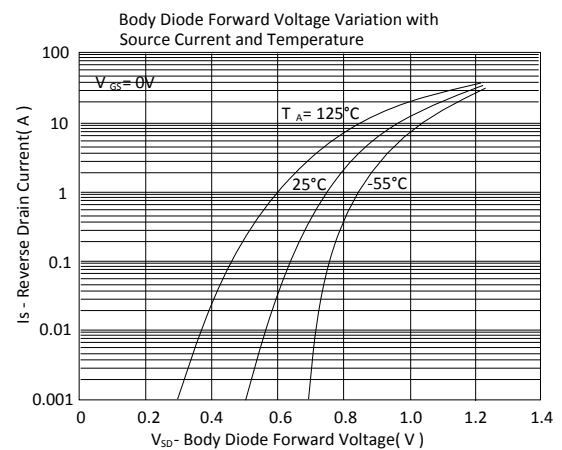
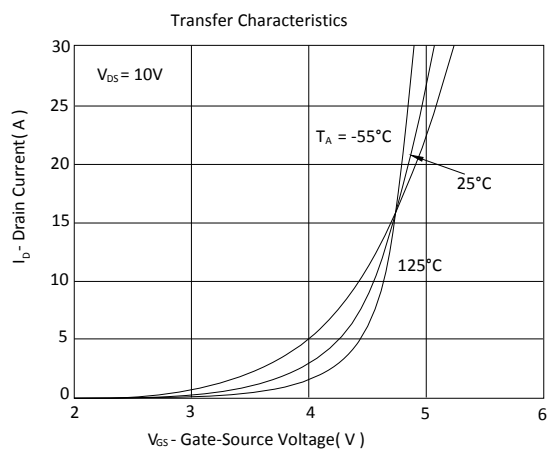
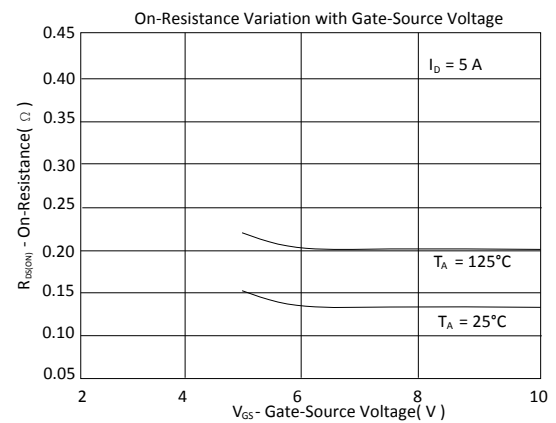
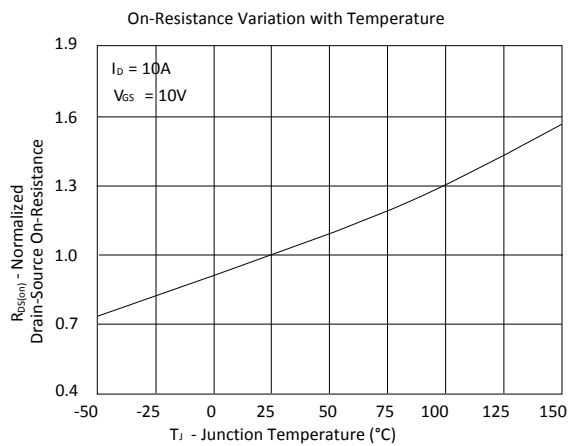
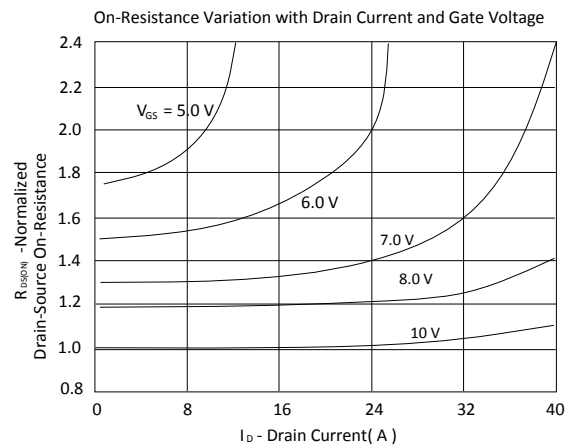
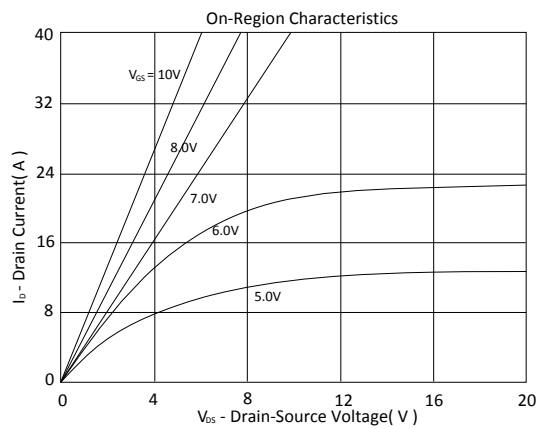
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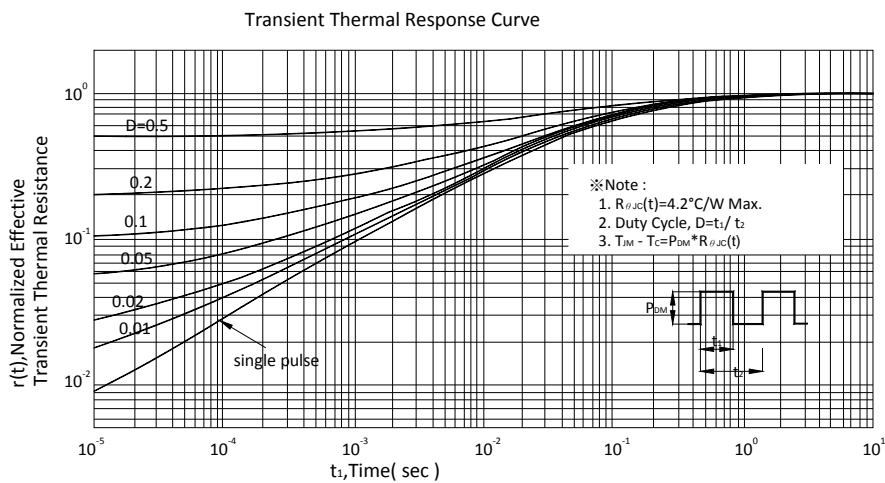
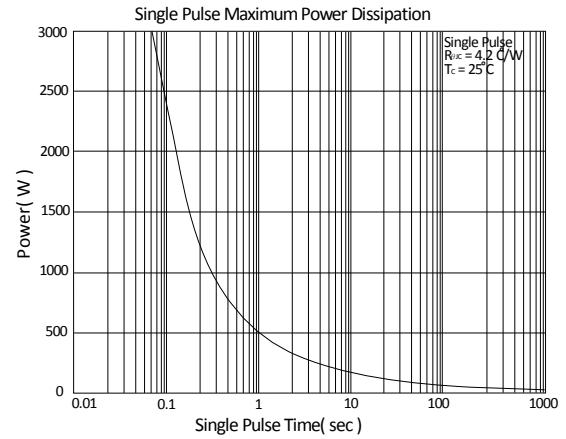
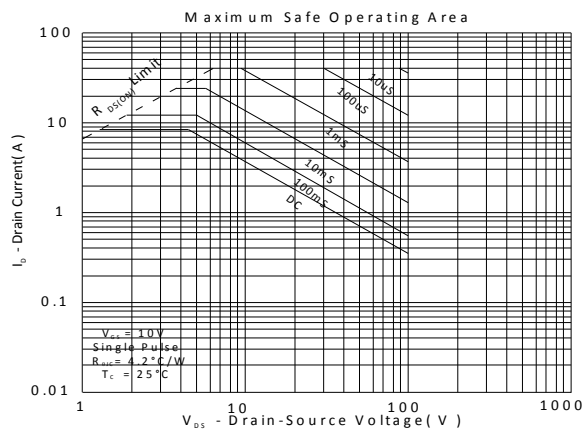
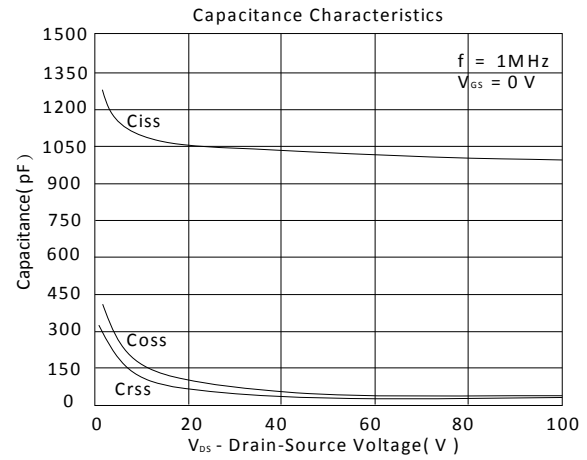
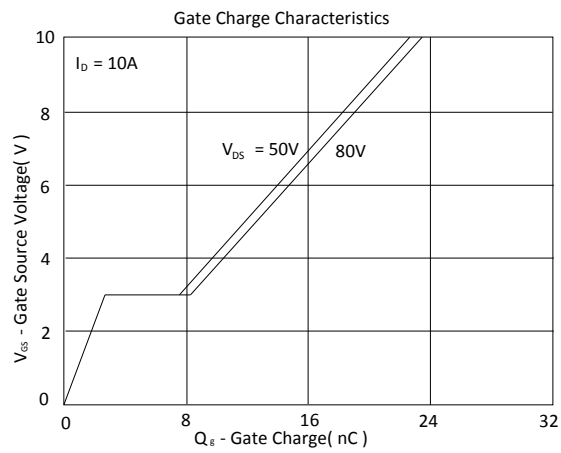
Device Name: EMBA5N10A for DPAK (TO-252)



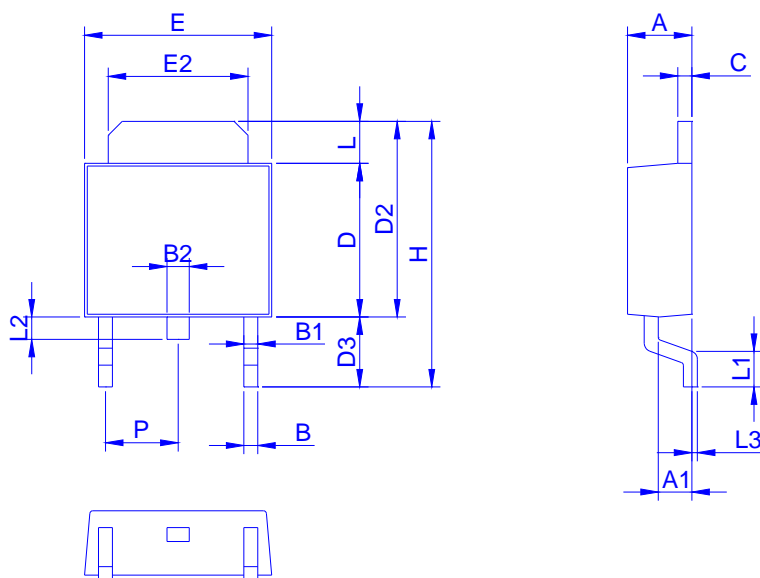


TYPICAL CHARACTERISTICS





## 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

