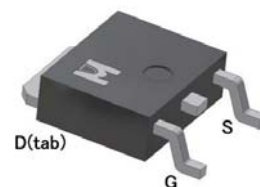


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	20V
$R_{DS(on)} (MAX.)$	30m Ω
I_D	10A



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}	± 12	V
Continuous Drain Current	$T_C = 25\text{ }^{\circ}\text{C}$	I_D	10	A
	$T_C = 70\text{ }^{\circ}\text{C}$		7	
Pulsed Drain Current ¹		I_{DM}	40	
Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	25	W
	$T_C = 70\text{ }^{\circ}\text{C}$		16	
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	$R_{\theta JC}$		5	$^{\circ}\text{C} / \text{W}$
Junction-to-Ambient ³	$R_{\theta JA}$		62	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

³62 $^{\circ}\text{C} / \text{W}$ when mounted on a 1 in² pad of 2 oz copper.



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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.45	0.75	1.2	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 16V, V_{GS} = 0V$			1	μA
		$V_{DS} = 16V, V_{GS} = 0V, T_J = 125\text{ }^{\circ}C$			10	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 5V, V_{GS} = 4.5V$	10			A
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 5A$		26	30	m Ω
		$V_{GS} = 2.5V, I_D = 4A$		45	51	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 5A$		7		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 10V, f = 1MHz$		280		pF
Output Capacitance	C_{oss}			47		
Reverse Transfer Capacitance	C_{rss}			38		
Total Gate Charge ^{1,2}	Q_g	$V_{DS} = 10V, V_{GS} = 4.5V,$ $I_D = 5A$		6.2		nC
Gate-Source Charge ^{1,2}	Q_{gs}			0.9		
Gate-Drain Charge ^{1,2}	Q_{gd}			2.1		
Turn-On Delay Time ^{1,2}	$t_{d(on)}$	$V_{DS} = 10V,$ $I_D = 1A, V_{GS} = 4.5V, R_{GS} = 6\Omega$		12		nS
Rise Time ^{1,2}	t_r			15		
Turn-Off Delay Time ^{1,2}	$t_{d(off)}$			30		
Fall Time ^{1,2}	t_f			13		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_c = 25\text{ }^{\circ}C$)						
Continuous Current	I_S				10	A
Pulsed Current ³	I_{SM}				40	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0V$			1.2	V

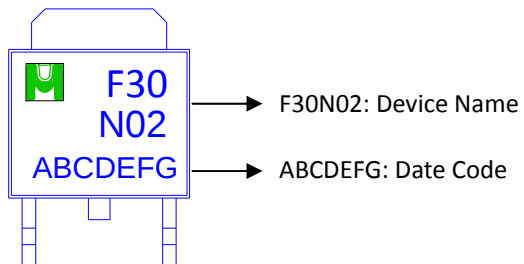
¹Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

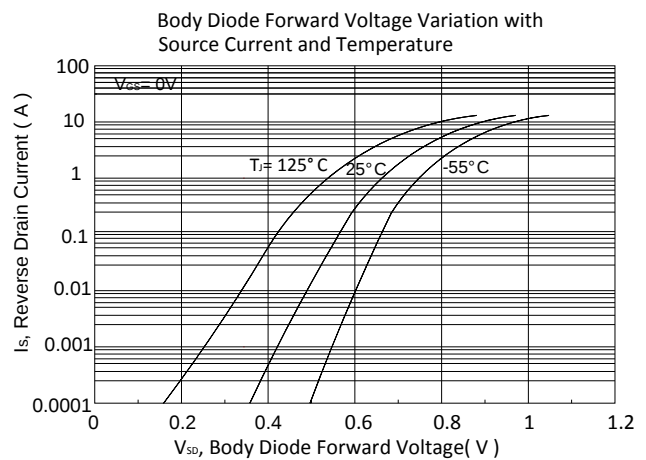
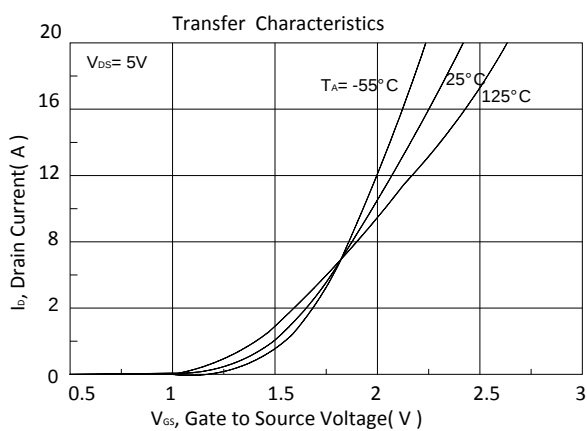
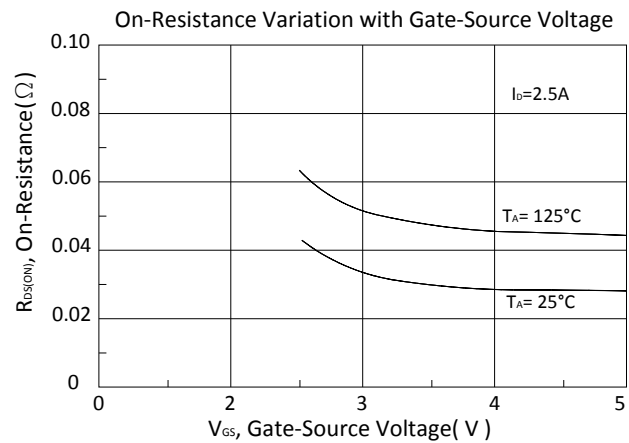
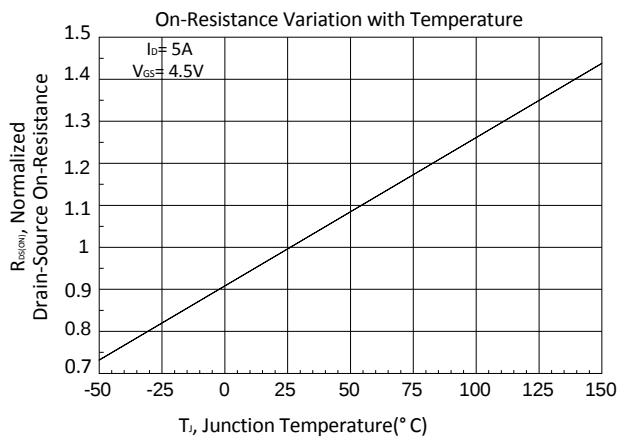
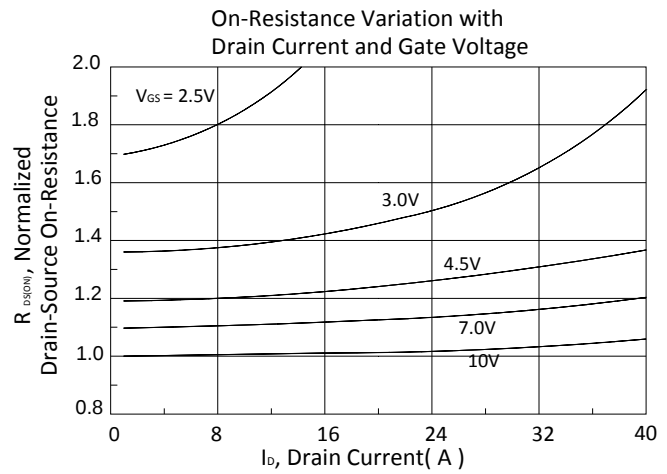
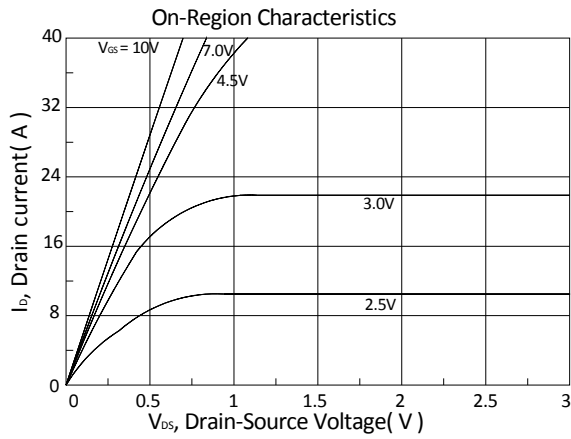
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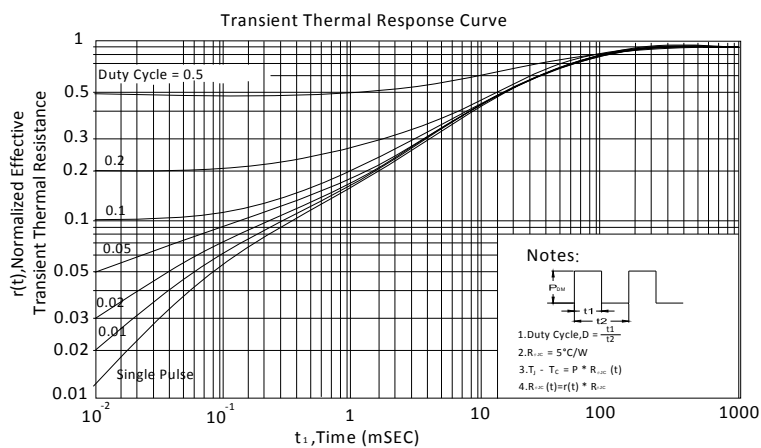
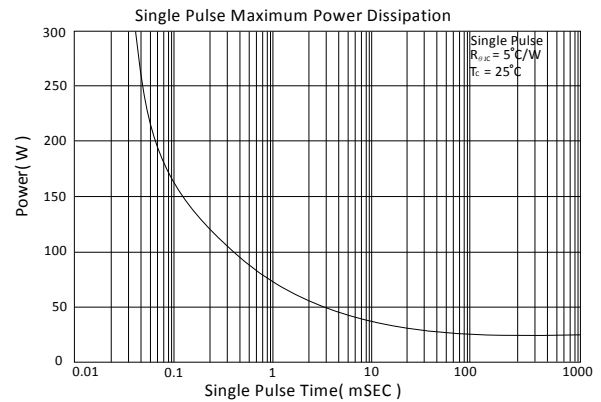
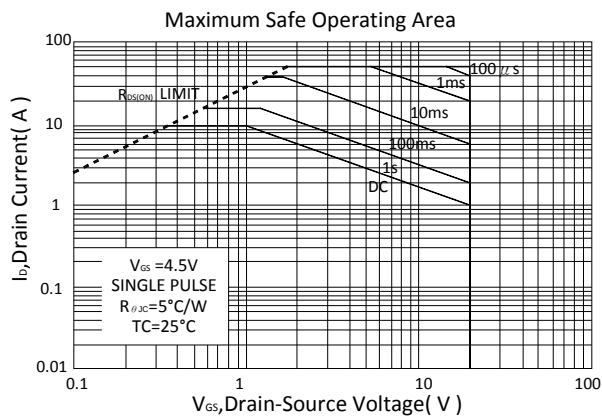
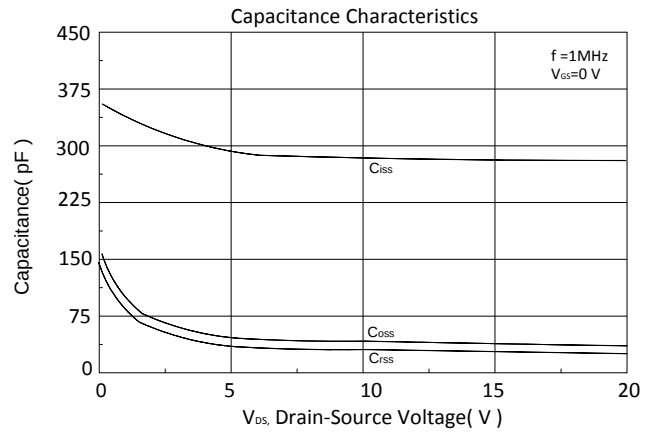
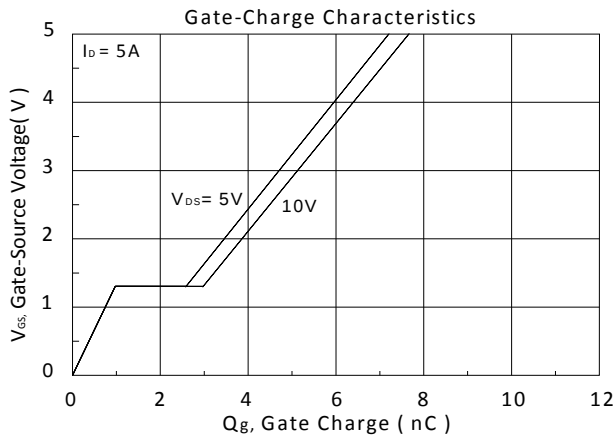
Device Name: EMF30N02A for DPAK (TO-252)



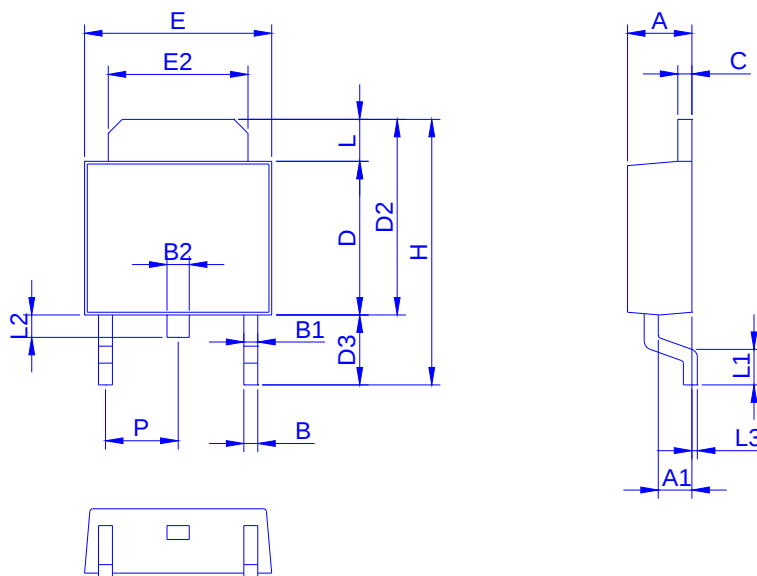


TYPICAL CHARACTERISTICS





Outline Drawing



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

