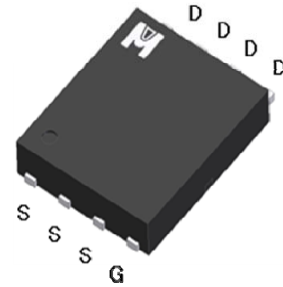


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

$BV_{DSS}$	50V
$R_{DS(on)}$ (MAX.)	3.5m $\Omega$
$I_D$	85A



UIS, Rg 100% Tested

Pb-Free Lead Plating & Halogen Free



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	$I_D$	85	A
	$T_C = 100\text{ }^\circ\text{C}$		53	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	240	
Avalanche Current		$I_{AS}$	75	
Avalanche Energy	$L = 0.1\text{mH}, I_D = 75\text{A}, R_G = 25\Omega$	$E_{AS}$	281	mJ
Repetitive Avalanche Energy <sup>2</sup>	$L = 0.05\text{mH}$	$E_{AR}$	140	
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	$P_D$	50	W
	$T_C = 100\text{ }^\circ\text{C}$		20	
Operating Junction & Storage Temperature Range		$T_{j}, T_{stg}$	-55 to 150	$^\circ\text{C}$

100% UIS testing in condition of  $V_D = 30\text{V}$ ,  $L = 0.1\text{mH}$ ,  $V_G = 10\text{V}$ ,  $I_L = 50\text{A}$ , Rated  $V_{DS} = 50\text{V}$  N-CH

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		2.5	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		62	

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

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



ELECTRICAL CHARACTERISTICS (T<sub>J</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	50			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	3.0	3.8	4.5	
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> = 40V, V <sub>GS</sub> = 0V			1	μA
		V <sub>DS</sub> = 33V, 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	85			A
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 24A		3	3.5	mΩ
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 24A		57		S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 25V, f = 1MHz		3233		pF
Output Capacitance	C <sub>oss</sub>			952		
Reverse Transfer Capacitance	C <sub>rss</sub>			142		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> = 15mV, V <sub>DS</sub> = 0V, f = 1MHz		2.6		Ω
Total Gate Charge <sup>1,2</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 24A		45		nC
Gate-Source Charge <sup>1,2</sup>	Q <sub>gs</sub>			18		
Gate-Drain Charge <sup>1,2</sup>	Q <sub>gd</sub>			12		
Turn-On Delay Time <sup>1,2</sup>	t <sub>d(on)</sub>	V <sub>DS</sub> = 25V, I <sub>D</sub> = 1A, V <sub>GS</sub> = 10V, R <sub>GS</sub> = 6Ω		50		nS
Rise Time <sup>1,2</sup>	t <sub>r</sub>			100		
Turn-Off Delay Time <sup>1,2</sup>	t <sub>d(off)</sub>			60		
Fall Time <sup>1,2</sup>	t <sub>f</sub>			120		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>C</sub> = 25 °C)</b>						
Continuous Current	I <sub>S</sub>				85	A
Pulsed Current <sup>3</sup>	I <sub>SM</sub>				240	
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = 24A, V <sub>GS</sub> = 0V			1.3	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 24A, dI <sub>F</sub> /dt = 100A / μS		25		nS
Reverse Recovery Charge	Q <sub>rr</sub>				125	

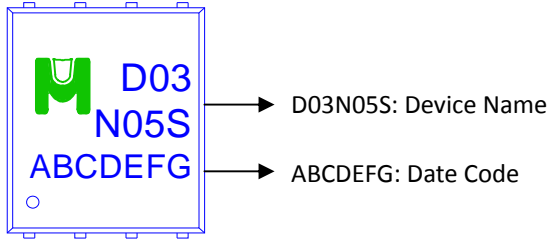
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

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

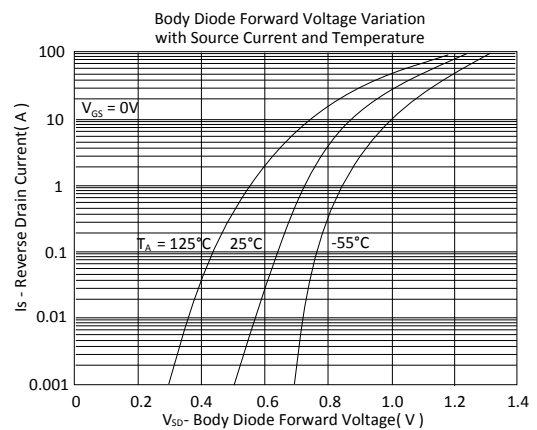
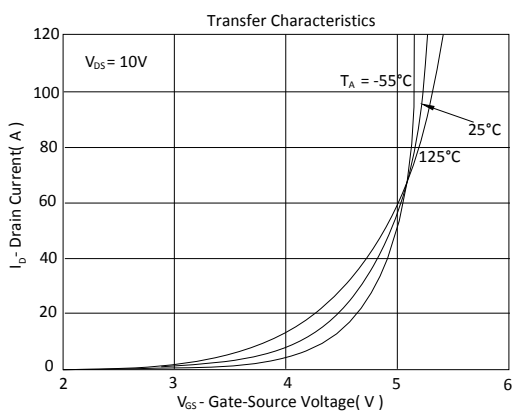
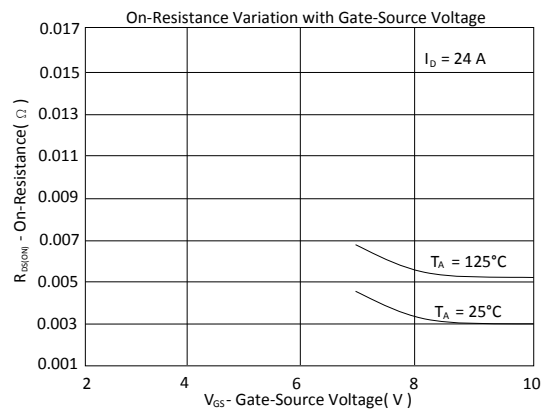
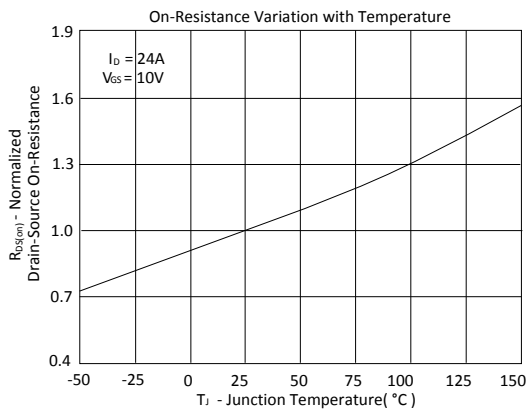
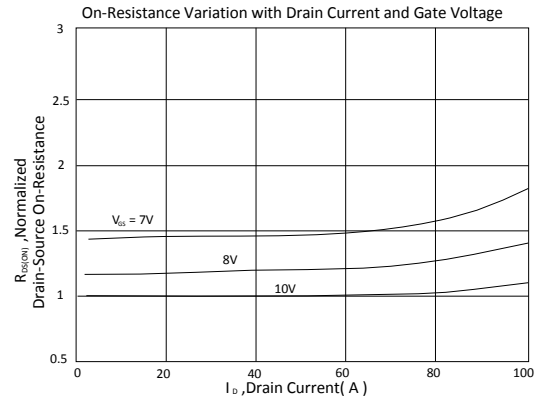
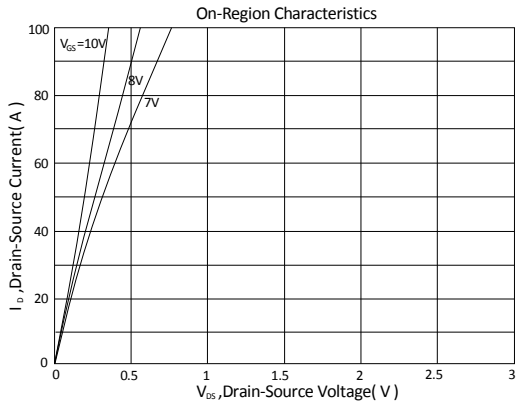
<sup>3</sup>Pulse width limited by maximum junction temperature.

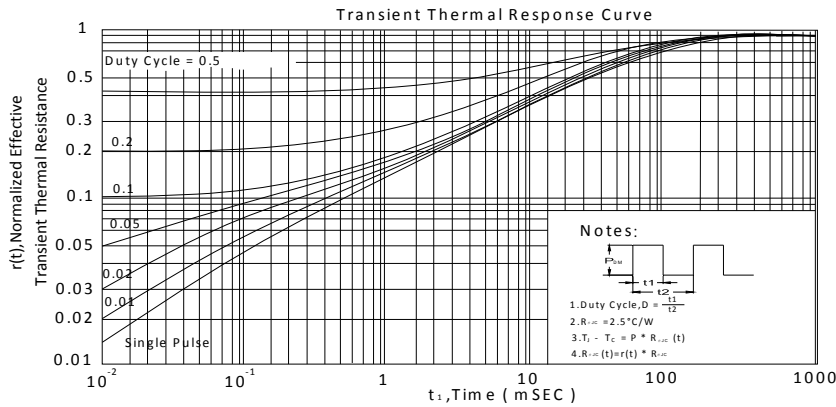
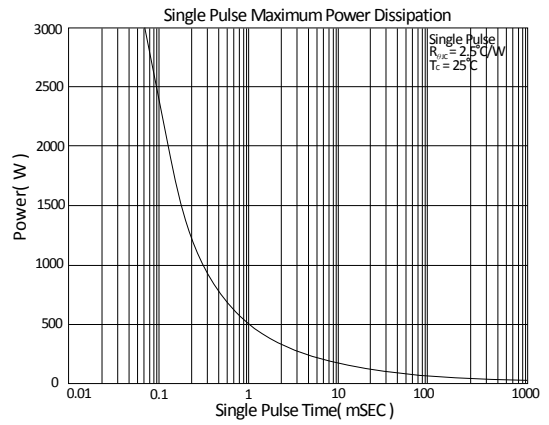
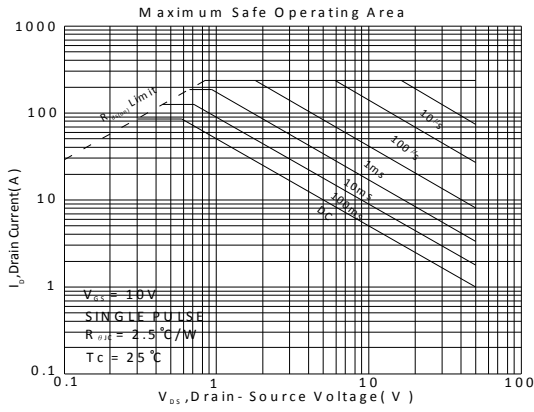
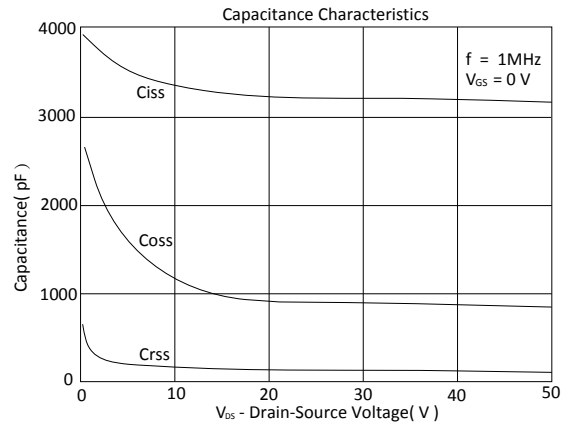
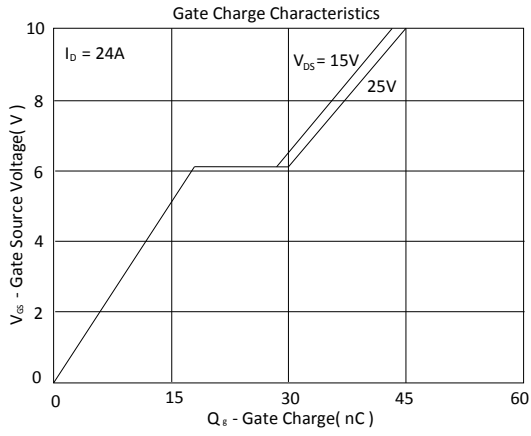
Ordering & Marking Information:

Device Name: EMD03N05HS for EDFN 5 x 6



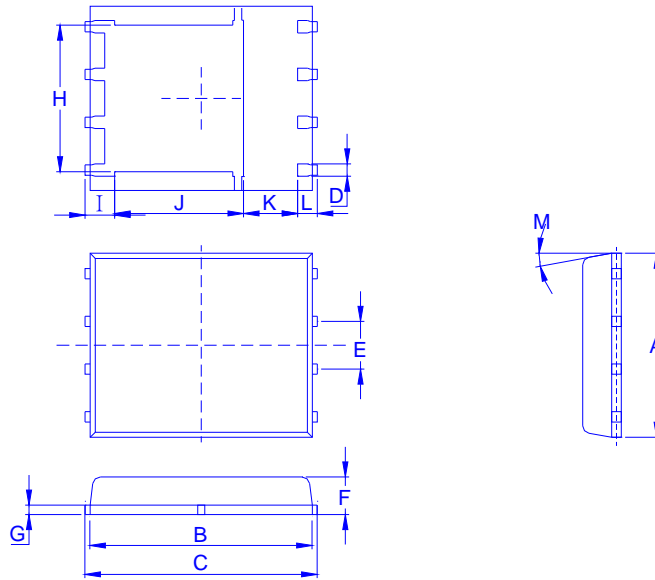
TYPICAL CHARACTERISTICS







Outline Drawing



Dimension in mm

Dimension	A	B	C	D	E	F	G	H	I	J	K	L	M
Min.	4.80	5.50	5.90	0.3		0.85	0.15	3.67	0.41	3.00	0.94	0.45	0°
Typ.					1.27								
Max.	5.30	5.90	6.15	0.51		1.20	0.30	4.54	0.85	3.92	1.7	0.71	12°

Recommended minimum pads

