

N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

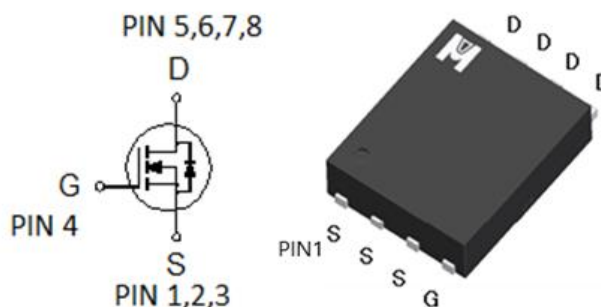
BV_{DSS}	60V
$R_{DS(on)} (MAX.)$	3m Ω
I_D	97A

N Channel MOSFET

UIS, Rg 100% Tested

RoHS & Halogen Free & TSCA Compliant

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



PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	97	A
	$T_C = 100^\circ\text{C}$		61	
Pulsed Drain Current ¹		I_{DM}	240	
Avalanche Current		I_{AS}	75	
Avalanche Energy	$L = 0.1\text{mH}, I_{AS}=75\text{A}, R_G=25\Omega$	E_{AS}	281	mJ
Repetitive Avalanche Energy ²	$L = 0.05\text{mH}$	E_{AR}	140	
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	50	W
	$T_C = 100^\circ\text{C}$		20	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

100% UIS testing in condition of $V_D=30\text{V}$, $L=0.1\text{mH}$, $V_G=10\text{V}$, $I_L=45\text{A}$, Rated $V_{DS}=60\text{V}$ 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	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $< 1\%$

³The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz.

Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

⁴Guarantee by Engineering test

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	3.0	4.5	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 48V, V_{GS} = 0V$			1	μA
		$V_{DS} = 40V, V_{GS} = 0V, T_J = 125\text{ }^{\circ}C$			25	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 5V, V_{GS} = 10V$	97			A
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 24A$		2.5	3.0	m Ω
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 24A$		57		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 30V, f = 1MHz$		4685		pF
Output Capacitance	C_{oss}			677		
Reverse Transfer Capacitance	C_{rss}			60		
Gate Resistance	R_g	$V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz$		1.3		Ω
Total Gate Charge ^{1,2}	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 24A$		57		nC
Gate-Source Charge ^{1,2}	Q_{gs}			15		
Gate-Drain Charge ^{1,2}	Q_{gd}			11		
Turn-On Delay Time ^{1,2}	$t_{d(on)}$	$V_{DS} = 30V, I_D = 5A, V_{GS} = 10V, R_G = 6\Omega$		13.4		nS
Rise Time ^{1,2}	t_r			15.8		
Turn-Off Delay Time ^{1,2}	$t_{d(off)}$			33.6		
Fall Time ^{1,2}	t_f			23.7		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _C = 25 °C)						
Continuous Current	I_S				97	A
Pulsed Current ³	I_{SM}				240	
Forward Voltage ¹	V_{SD}	$I_F = 24A, V_{GS} = 0V$			1.3	V
Reverse Recovery Time	t_{rr}	$I_F = 24A, dI_F/dt = 100A / \mu S$		25		nS
Reverse Recovery Charge	Q_{rr}			125		nC

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

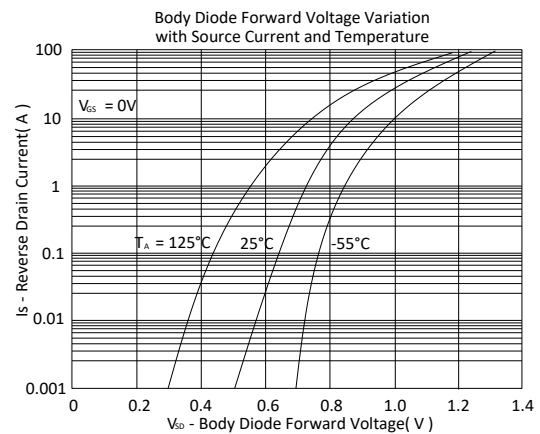
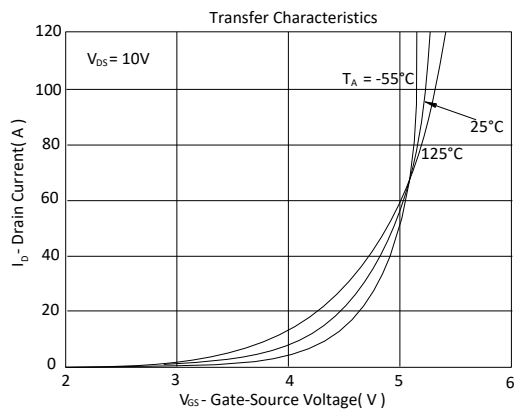
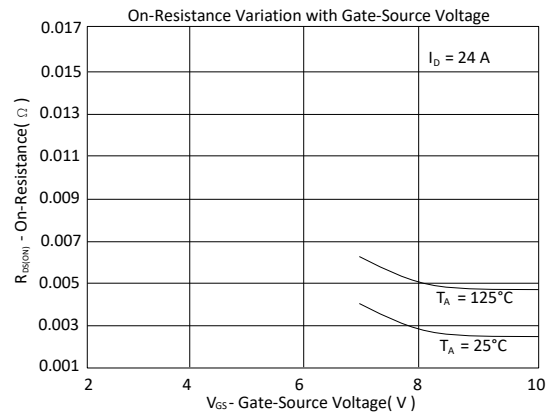
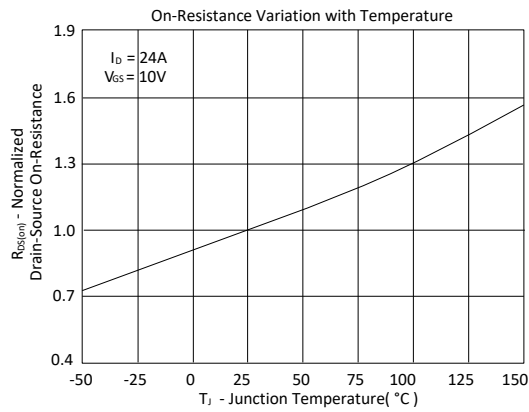
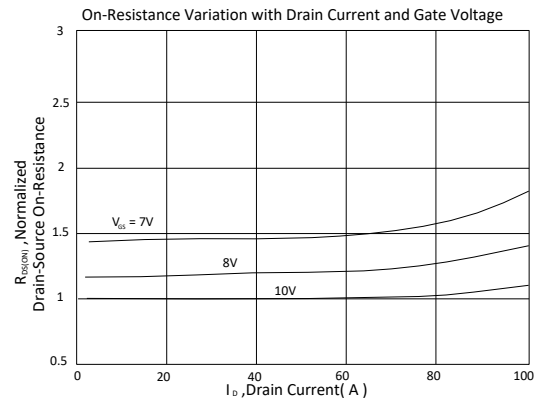
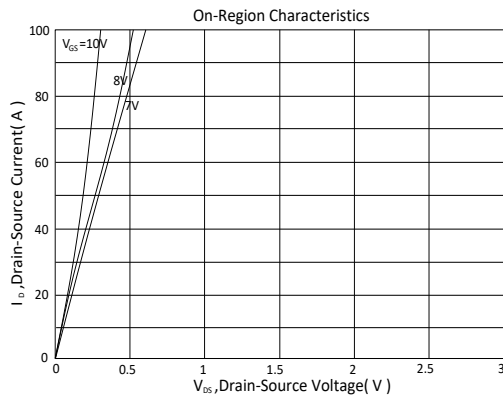
²Independent of operating temperature.

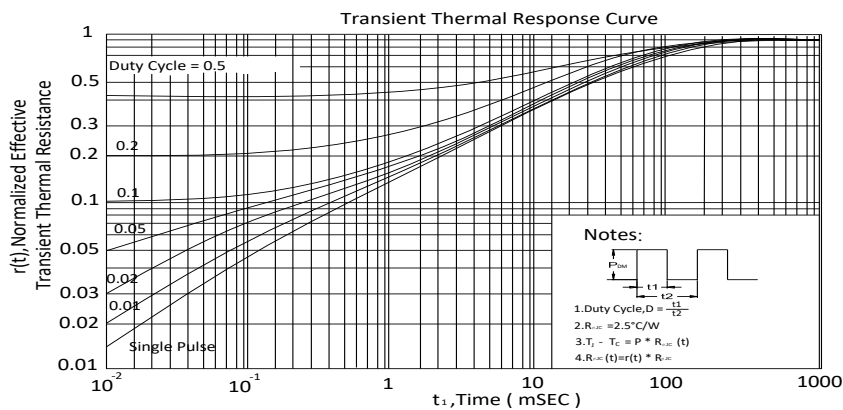
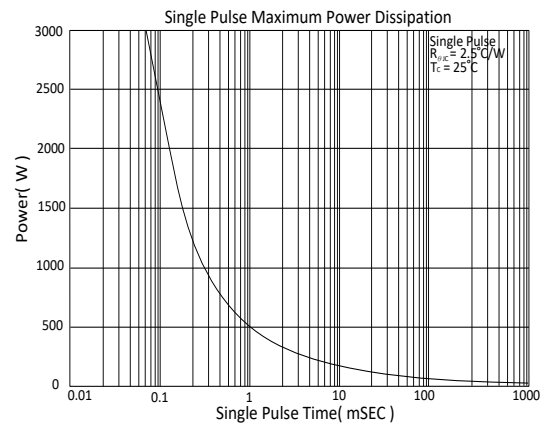
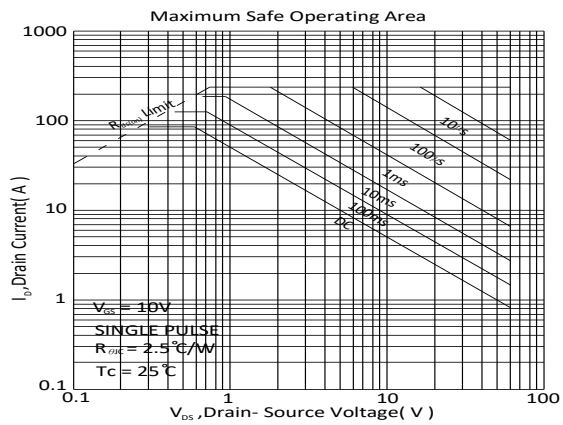
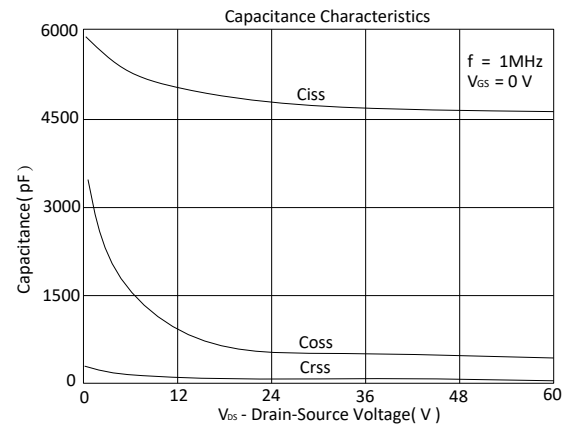
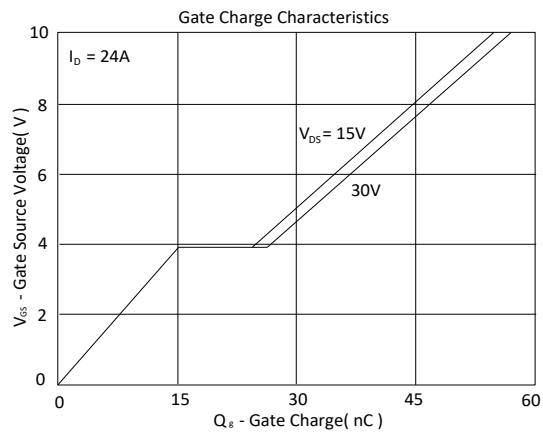
³Pulse width limited by maximum junction temperature.

EMC will review datasheet by quarter, and update new version.



TYPICAL CHARACTERISTICS





Ordering & Marking Information:

Device Name: EMD03N06HS for EDFN5X6



EMD03N06HS: Device Name

ABCDEFGH: Date Code

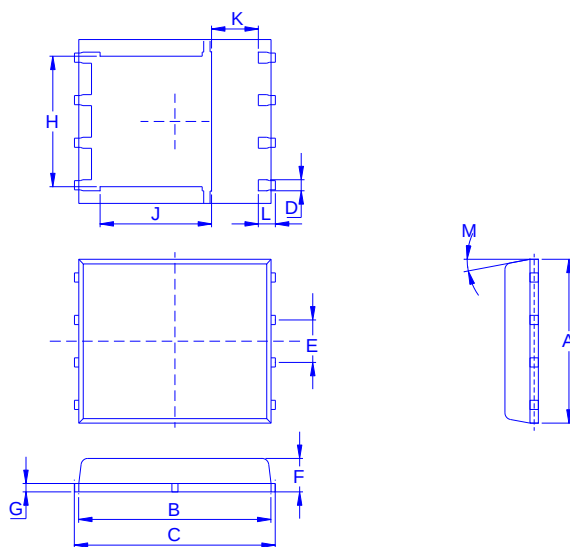
A: Assembly House

B: Year(A:2008 B:2009 C:2010....)

C: Month(A:01 B:02 C:03 D:04 E:05 F:06 G:07 H:08 I:09 J:10 K:11 L:12)

DEFG: Serial No.

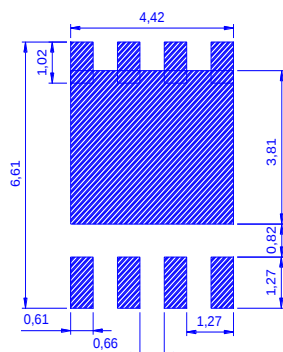
Outline Drawing



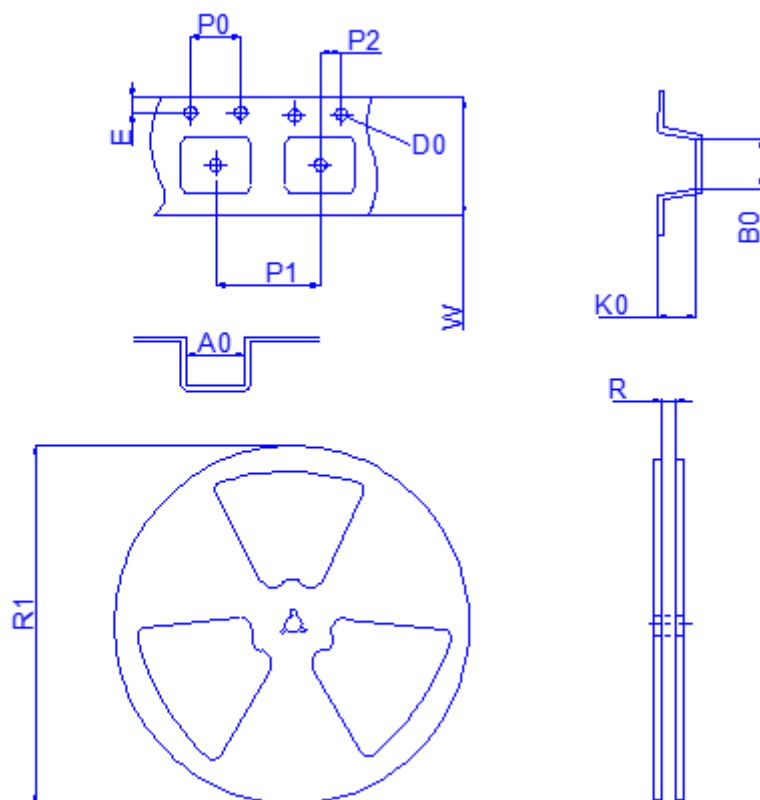
Dimension in mm

Dimension	A	B	C	D	E	F	G	H	J	K	L	M
Min	4.8	5.55	5.9	0.3	1.17	0.85	0.15	3.61	3.18	1	0.38	0°
Typ.	4.9	5.7	6	0.4	1.27	0.95	0.2	3.87	3.44	1.2	0.4	
Max	5.4	5.85	6.15	0.51	1.37	1.17	0.34	4.31	3.78	1.39	0.71	12°

Recommended minimum pads



- ◆ Tape&Reel Information:2500pcs/Reel(Dimension in millimeter)



Package	EDFN5X6
Reel	13"
Device orientation	FEED DIRECTION

Dimension in mm

Dimension	Carrier tape								Reel		
	A0	B0	D0	E	K0	P0	P1	P2	W	R	R1
Typ.	6.4	5.3	1.5	1.8	1.6	4	8	2	12	12.4	330
±	0.2	0.2	0.1	0.1	0.6	0.1	0.1	0.1	0.3	2	2