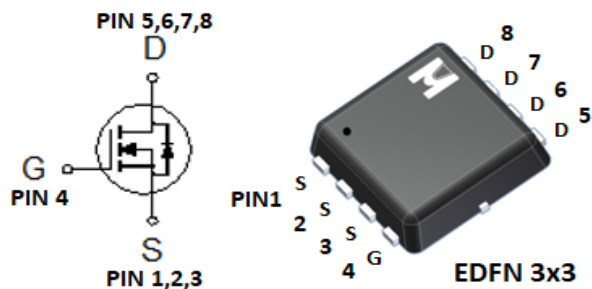


Single N-Channel Logic Level Enhancement Mode Field Effect Transistor

• Product Summary:

	N-CH
BVDSS	30 V
$R_{DS(on) (MAX.)}@V_{GS}=10V$	7.8 m Ω
$R_{DS(on) (MAX.)}@V_{GS}=4.5V$	10.5 m Ω
$I_D @T_C=25^{\circ}C$	73 A

• Pin Description:



Single N Channel MOSFET

UIS, Rg 100% Tested

Pb-Free Lead Plating & Halogen Free



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C = 25^{\circ}C$	I_D	73	A
	$T_C = 100^{\circ}C$		49	
Continuous Drain Current	$T_A = 25^{\circ}C$	I_D	12	
	$T_A = 70^{\circ}C$		10	
Pulsed Drain Current ¹		I_{DM}	131	
Avalanche Current		I_{AS}	35	mJ
Avalanche Energy	$L = 0.1mH$	EAS	61	
Repetitive Avalanche Energy ²	$L = 0.05mH$	EAR	31	
Power Dissipation	$T_C = 25^{\circ}C$	P_D	83.3	W
	$T_C = 100^{\circ}C$		33.3	
Power Dissipation	$T_A = 25^{\circ}C$	P_D	2.3	W
	$T_A = 70^{\circ}C$		1.5	
Operating Junction & Storage Temperature Range		T_{j}, T_{stg}	-55 to 150	$^{\circ}C$

• 100% UIS testing in condition of $V_D=25V$, $L=0.1mH$, $V_G=10V$, $I_L=22A$, Rated $V_{DS}=30V$ N-CH

• THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		1.5	$^{\circ}C/W$
Junction-to-Ambient ³	$R_{\theta JA}$		55	

¹ Pulse width limited by maximum junction temperature.

² Duty cycle $< 1\%$

³ $55^{\circ}C / W$ when mounted on a 1 in² pad of 2 oz copper.

⁴ Guarantee by Engineering test

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage ⁴	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250uA	30			V
Gate Threshold Voltage ⁴	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1.2	1.7	2.5	
Gate-Body Leakage ⁴	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current ⁴	I _{DSS}	V _{DS} = 30V, V _{GS} = 0V			1	uA
		V _{DS} =30V, V _{GS} =0V, T _J = 125 °C			25	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 10V, V _{GS} = 10V	73			A
Drain-Source On-State Resistance ^{1,4}	R _{DS(ON)}	V _{GS} = 10V, I _D = 14A		5.5	7.8	mΩ
		V _{GS} = 4.5V, I _D = 10A		6.5	10.5	
DYNAMIC						
Input Capacitance ⁵	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz		981		pF
Output Capacitance ⁵	C _{oss}			155		
Reverse Transfer Capacitance ⁵	C _{rss}			97		
Gate Resistance ^{4,5}	R _g	f = 1MHz		0.65		Ω
Total Gate Charge ^{1,2,5}	Q _g (V _{GS} =10V)	V _{DS} = 15V, V _{GS} = 10V, I _D = 14A		17.3		nC
	Q _g (V _{GS} =4.5V)			8.9		
Gate-Source Charge ^{1,2,5}	Q _{gs}			2.5		
Gate-Drain Charge ^{1,2,5}	Q _{gd}			4.1		
Turn-On Delay Time ^{1,2,5}	t _{d(on)}	V _{DS} = 15V, V _{GS} = 10V, I _D = 5A , R _g = 6Ω		6.8		nS
Rise Time ^{1,2,5}	t _r			10.8		
Turn-Off Delay Time ^{1,2,5}	t _{d(off)}			21.5		
Fall Time ^{1,2,5}	t _f			13.1		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Current	I _S				73	A
Pulsed Current ³	I _{SM}				131	
Forward Voltage ^{1,4}	V _{SD}	I _F = 30A, V _{GS} = 0V			1.2	V
Reverse Recovery Time ⁵	t _{rr}	I _F = 30A, dI _F /dt = 400A / uS		6.8		nS
Peak Reverse Recovery Current ⁵	I _{RM(REC)}			1.95		A
Reverse Recovery Charge ⁵	Q _{rr}			7.1		nC

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

² Independent of operating temperature.

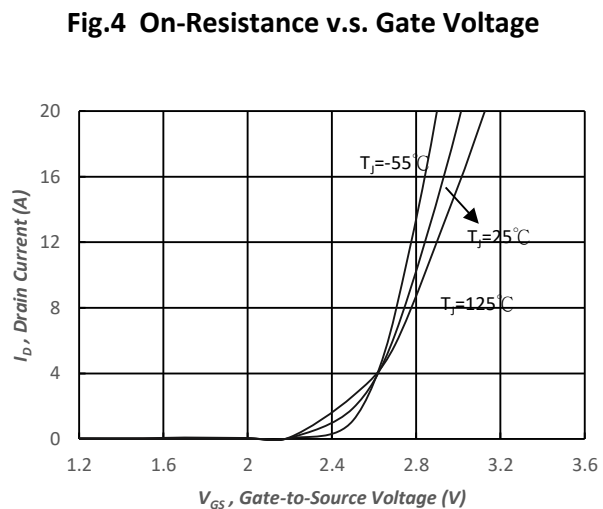
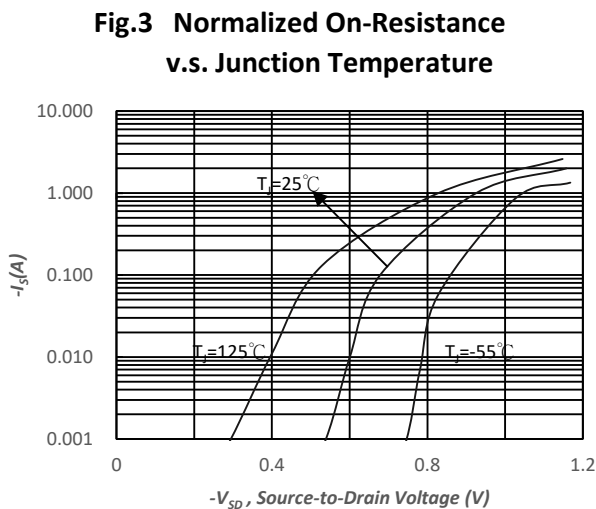
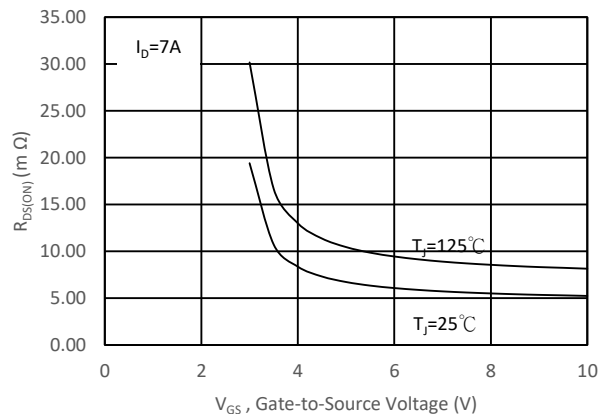
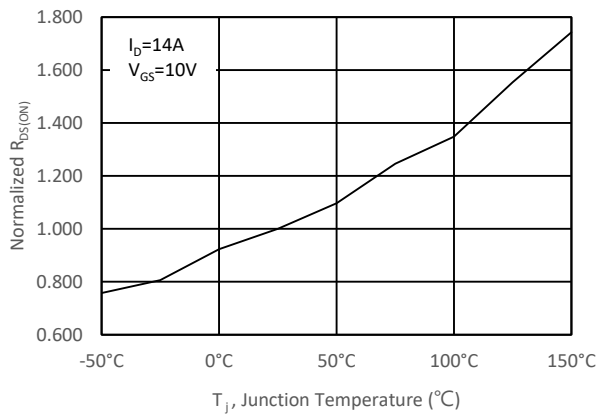
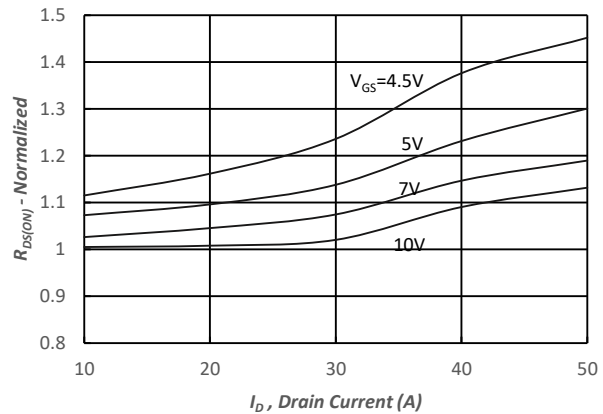
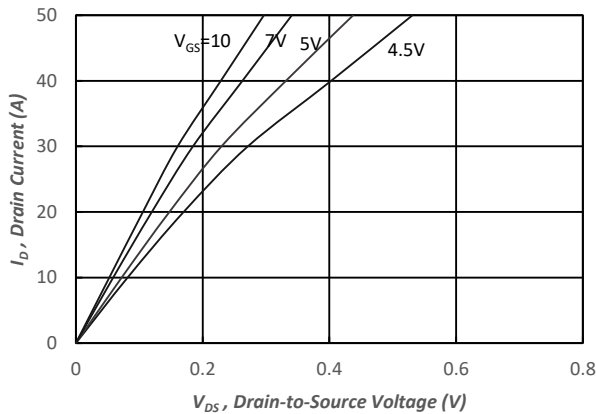
³ Pulse width limited by maximum junction temperature.

⁴ Guarantee by FT test Item

⁵ Guarantee by Engineering test

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

▪ TYPICAL CHARACTERISTICS



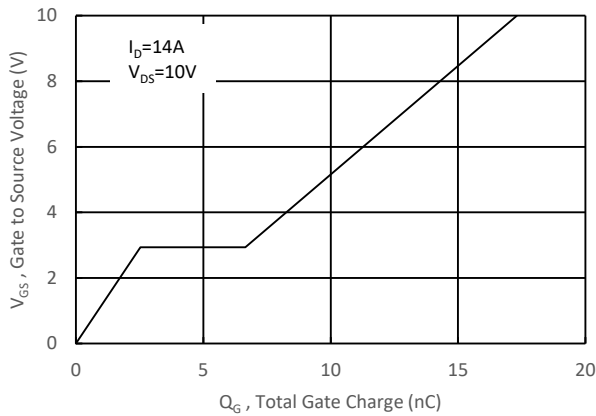


Fig.7 Gate Charge Characteristics

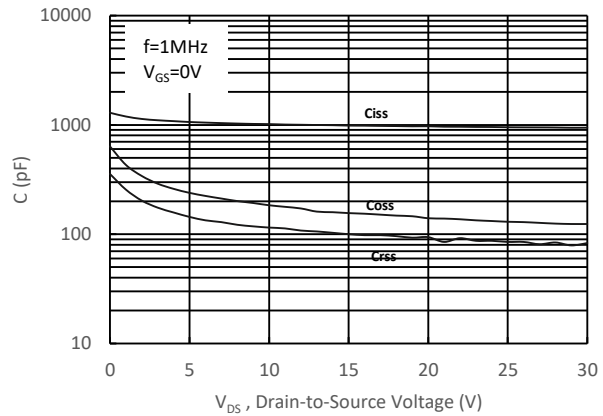


Fig.8 Typical Capacitance Characteristics

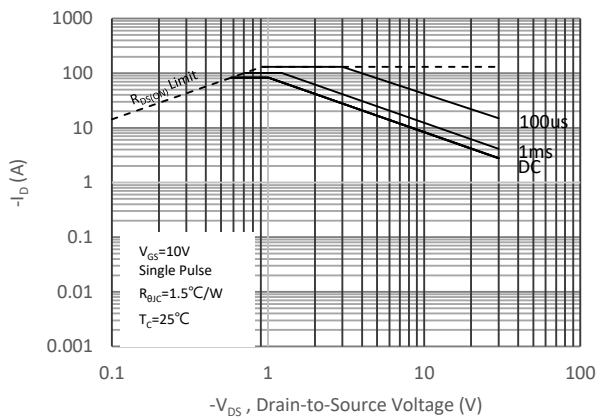


Fig 9. Maximum Safe Operating Area

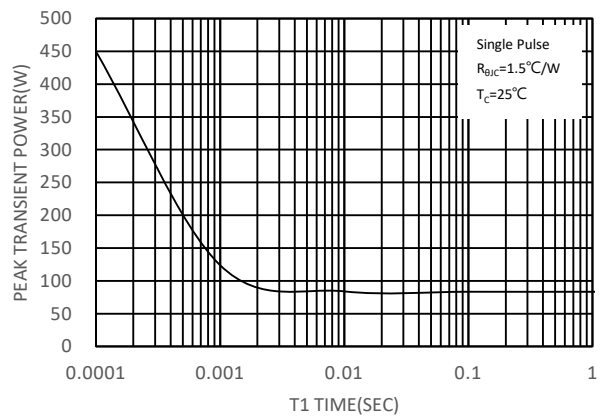


Fig 10. Single Pulse Maximum Power Dissipation

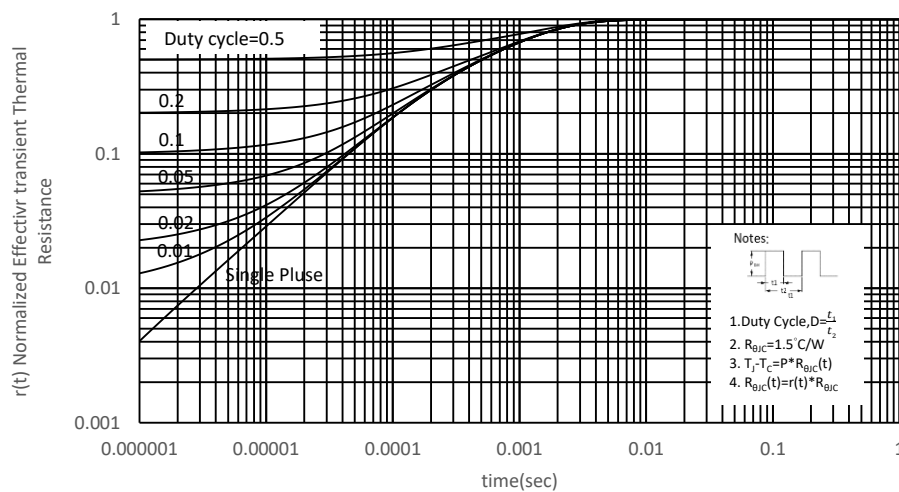


Fig 11. Effective Transient Thermal Impedance

Ordering & Marking Information:

Device Name: EMB07N03VQ for EDFN 3x3



B07N03: Device Name

ABCDEFGH: Date Code

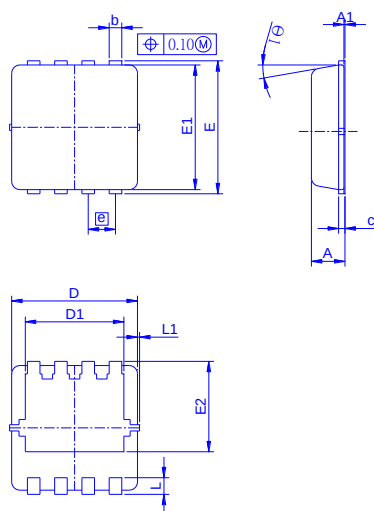
A: Assembly House

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)

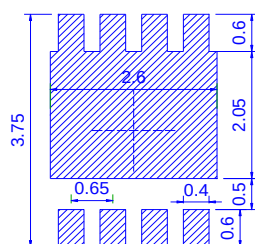
DEFG: Serial No.

Outline Drawing



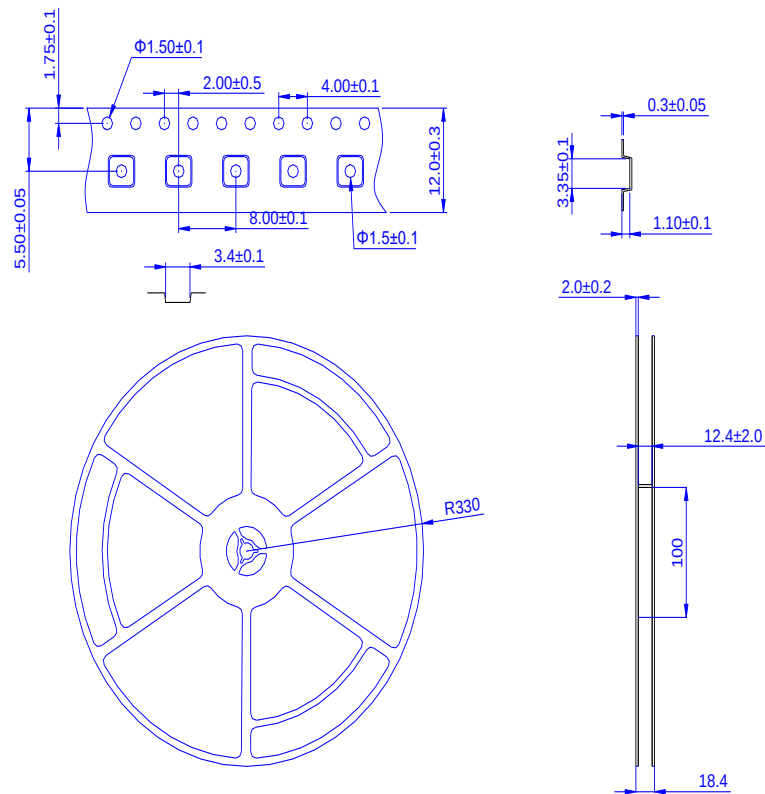
Dimension	A	A1	b	c	D	D1	E	E1	E2	e	L	L1	Θ1
Min.	0.65	0	0.2	0.1	2.9	2.15	3.1	2.9	1.53	0.55	0.25	-	0°
Typ.	0.75	-	0.3	0.15	3	2.45	3.2	3	1.97	0.65	0.4	0.075	10°
Max.	0.9	0.05	0.4	0.25	3.3	2.74	3.5	3.3	2.59	0.75	0.6	0.15	14°

Footprint





◆ Tape&Reel Information:5000pcs/Reel(Dimension in millimeter)



產品別	EDFN 3x3
Reel尺寸	13"
編帶方式	FEED DIRECTION
前空格	50
後空格	50
裝箱數	
滿捲數量	5K
捲/內盒比	01:01
內盒滿箱數	5K
內/外箱比	10:01
外箱滿箱數	50K



★Datasheet Latest version specification :

	Revision History	Prepared	Approved	Date
A.0	Initial Datasheet	Johnson	Sam	2020/4/10