

P-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

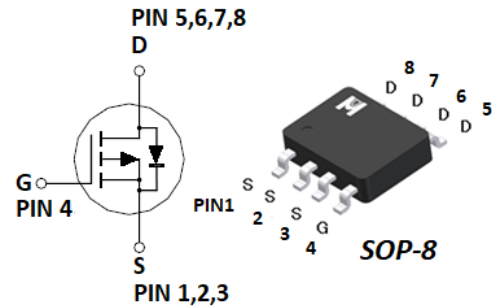
BV_{DSS}	-30V
$R_{DS(on)} (MAX.) (V_{GS} = -10V)$	10m Ω
I_D	-13A

P 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}	± 25	V
Continuous Drain Current	$T_A = 25^\circ\text{C}$	I_D	-13	A
	$T_A = 100^\circ\text{C}$		-10	
Pulsed Drain Current ¹		I_{DM}	-50	
Avalanche Current		I_{AS}	-15	
Avalanche Energy	$L = 0.1\text{mH}, I_D = -15\text{A}, R_G = 25\Omega$	E_{AS}	11.25	mJ
Repetitive Avalanche Energy ²	$L = 0.05\text{mH}$	E_{AR}	5.62	
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	2.5	W
	$T_A = 100^\circ\text{C}$		1	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^\circ\text{C}$

100% UIS testing in condition of $V_D = -15\text{V}$, $L = 0.1\text{mH}$, $V_G = -10\text{V}$, $I_L = -10\text{A}$, Rated $V_{DS} = -30\text{V}$ P-CH

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		25	$^\circ\text{C} / \text{W}$
Junction-to-Ambient ^{3,4}	$R_{\theta JA}$		50	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$.

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.

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1	-1.5	-3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±25V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24V, V _{GS} = 0V			-1	μA
		V _{DS} = -20V, V _{GS} = 0V, T _J = 125 °C			-10	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = -5V, V _{GS} = -10V	-13			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = -10V, I _D = -13A		8.2	10	mΩ
		V _{GS} = -4.5V, I _D = -9A		12.5	16	
Forward Transconductance ¹	g _{fs}	V _{DS} = -5V, I _D = -10A		30		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -15V, f = 1MHz		3067		pF
Output Capacitance	C _{oss}			453		
Reverse Transfer Capacitance	C _{rss}			398		
Gate Resistance	R _g	V _{GS} = 15mV, V _{DS} = 0V, f = 1MHz		4.0		Ω
Total Gate Charge ^{1,2}	Q _g (V _{GS} =10V)	V _{DS} = -15V, V _{GS} = -10V, I _D = -10A		52		nC
	Q _g (V _{GS} =4.5V)			23		
Gate-Source Charge ^{1,2}	Q _{gs}			6.5		
Gate-Drain Charge ^{1,2}	Q _{gd}			10		
Turn-On Delay Time ^{1,2}	t _{d(on)}	V _{DS} = -15V, I _D = -1A, V _{GS} = -10V, R _{GS} = 2.7Ω		15		nS
Rise Time ^{1,2}	t _r			12		
Turn-Off Delay Time ^{1,2}	t _{d(off)}			40		
Fall Time ^{1,2}	t _f			10		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _C = 25 °C)						
Continuous Current	I _S				-13	A
Pulsed Current ³	I _{SM}				-50	
Forward Voltage ¹	V _{SD}	I _F = I _S , V _{GS} = 0V			-1.2	V
Reverse Recovery Time	t _{rr}	I _F = I _S , dI _F /dt = 100A / μS		32		nS
Reverse Recovery Charge	Q _{rr}			26		nC

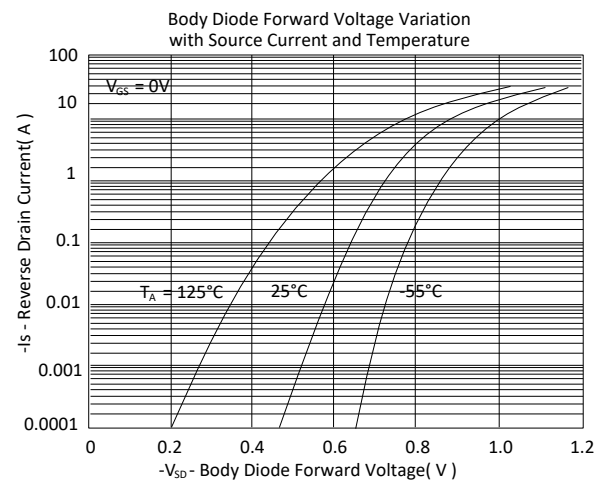
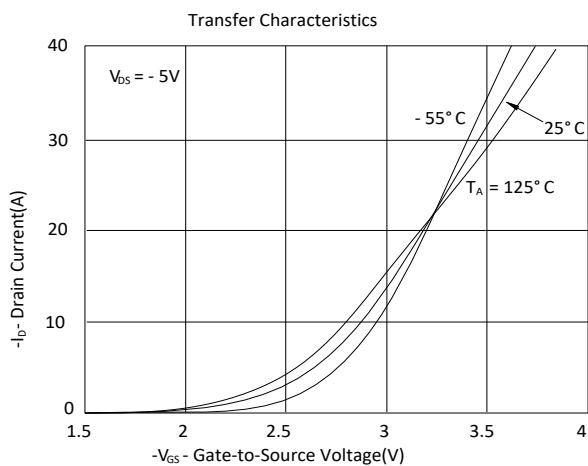
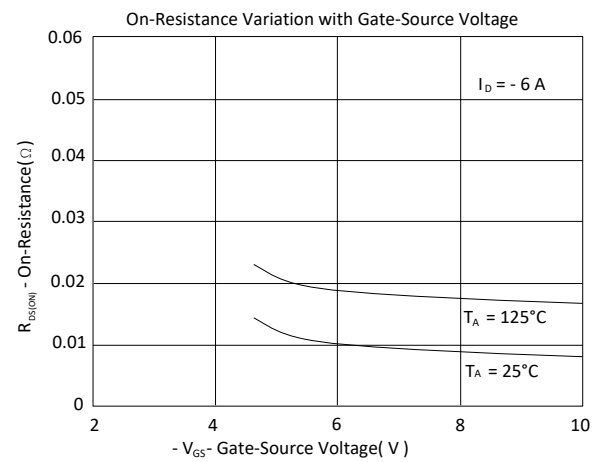
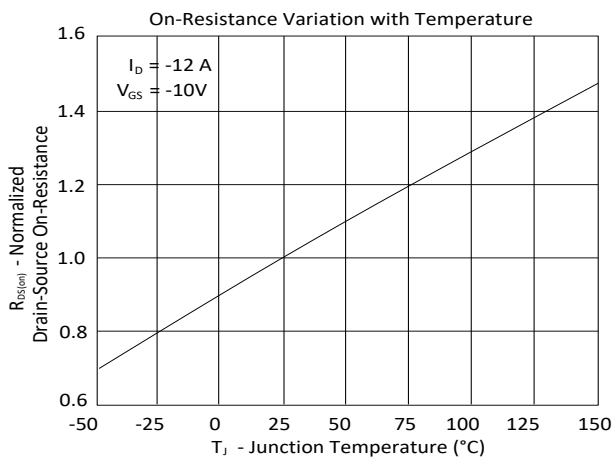
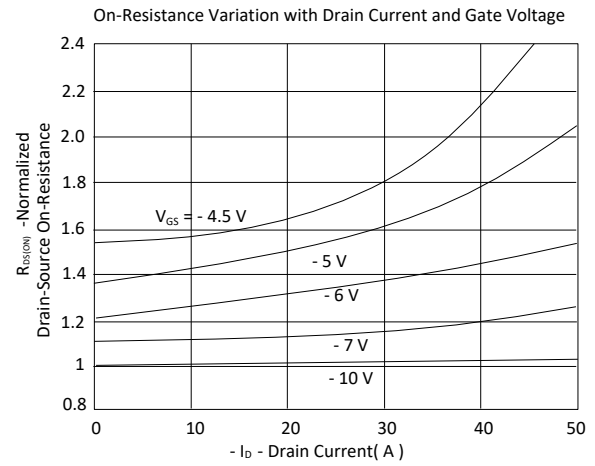
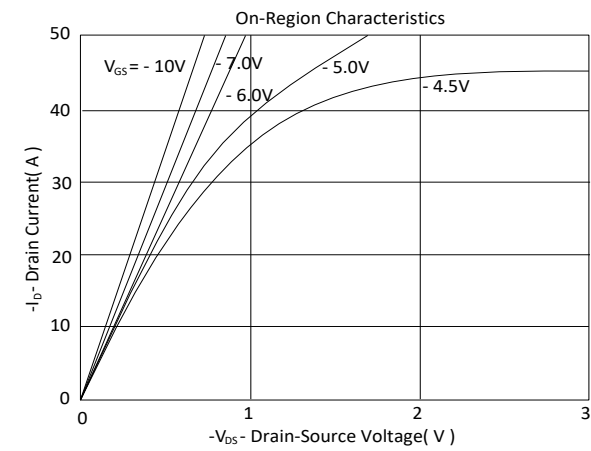
¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.

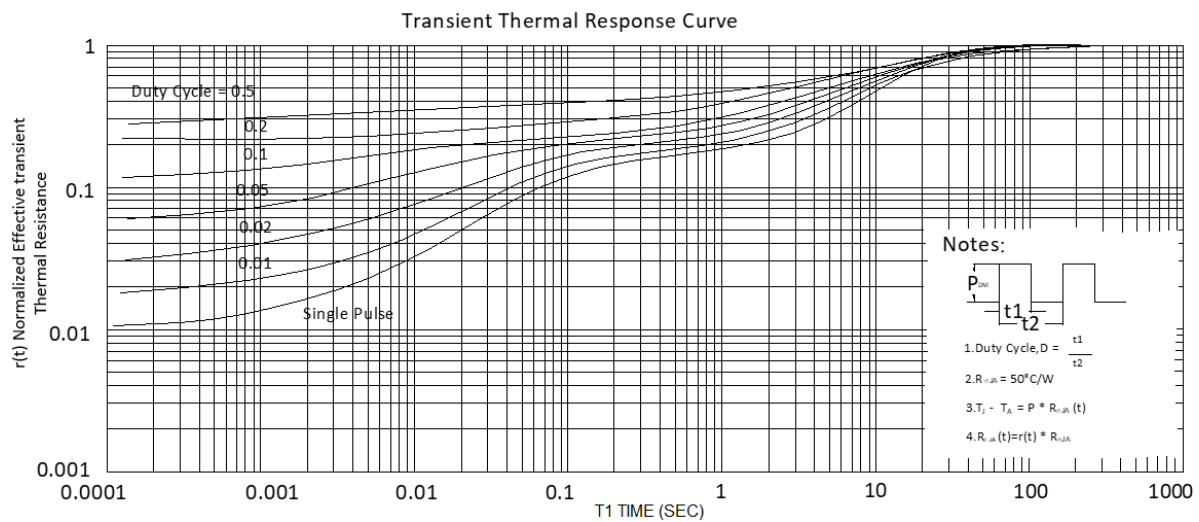
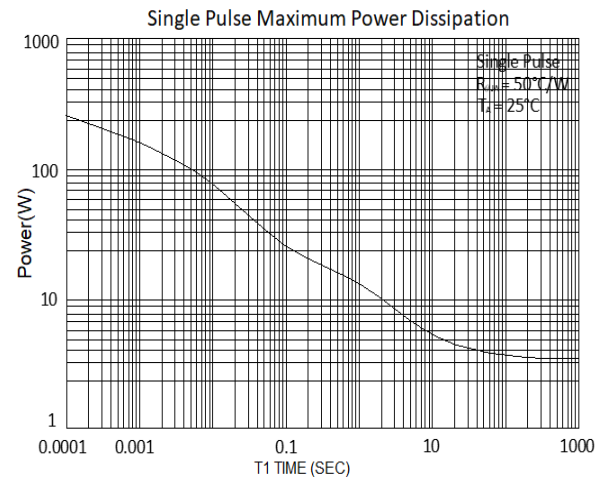
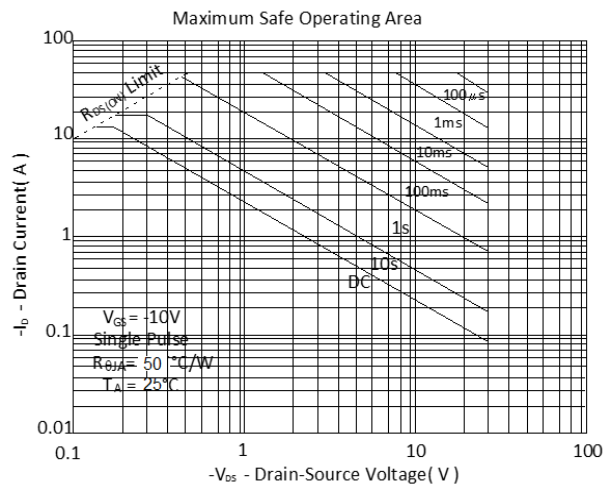
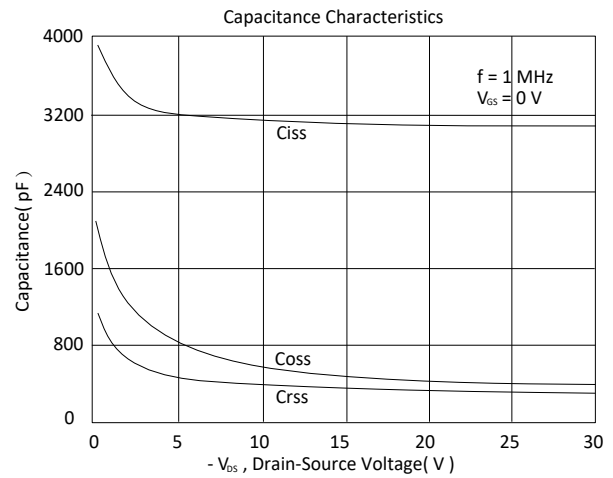
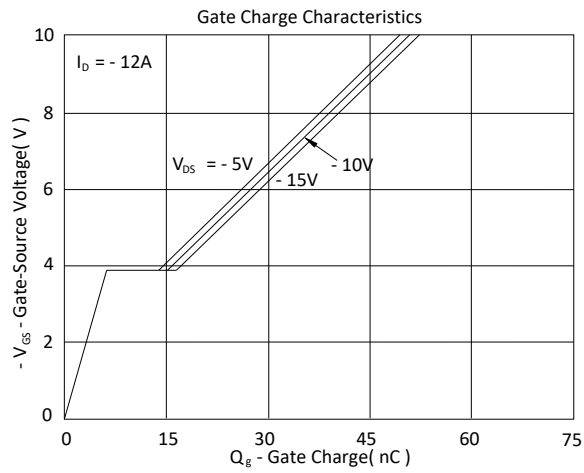
²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.



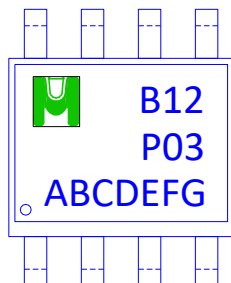
TYPICAL CHARACTERISTICS





Ordering & Marking Information:

Device Name: EMB12P03G for SOP-8



→ B12P03: Device Name

→ ABCDEFGH: Date Code

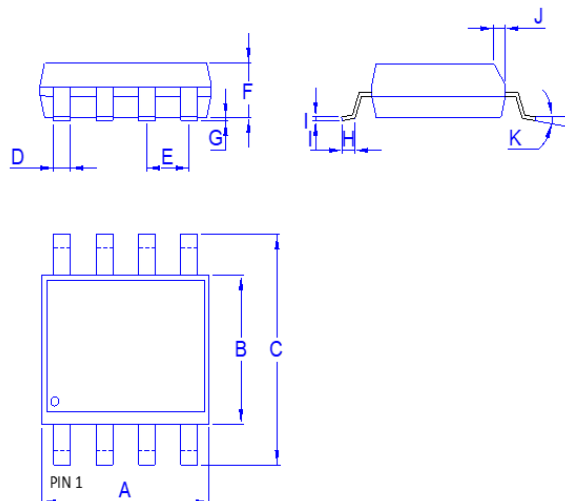
A: Assembly House

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.

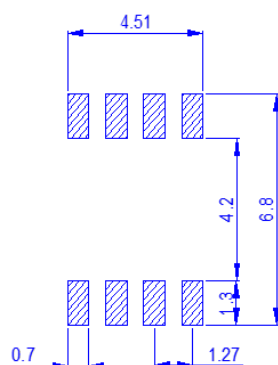
Outline Drawing



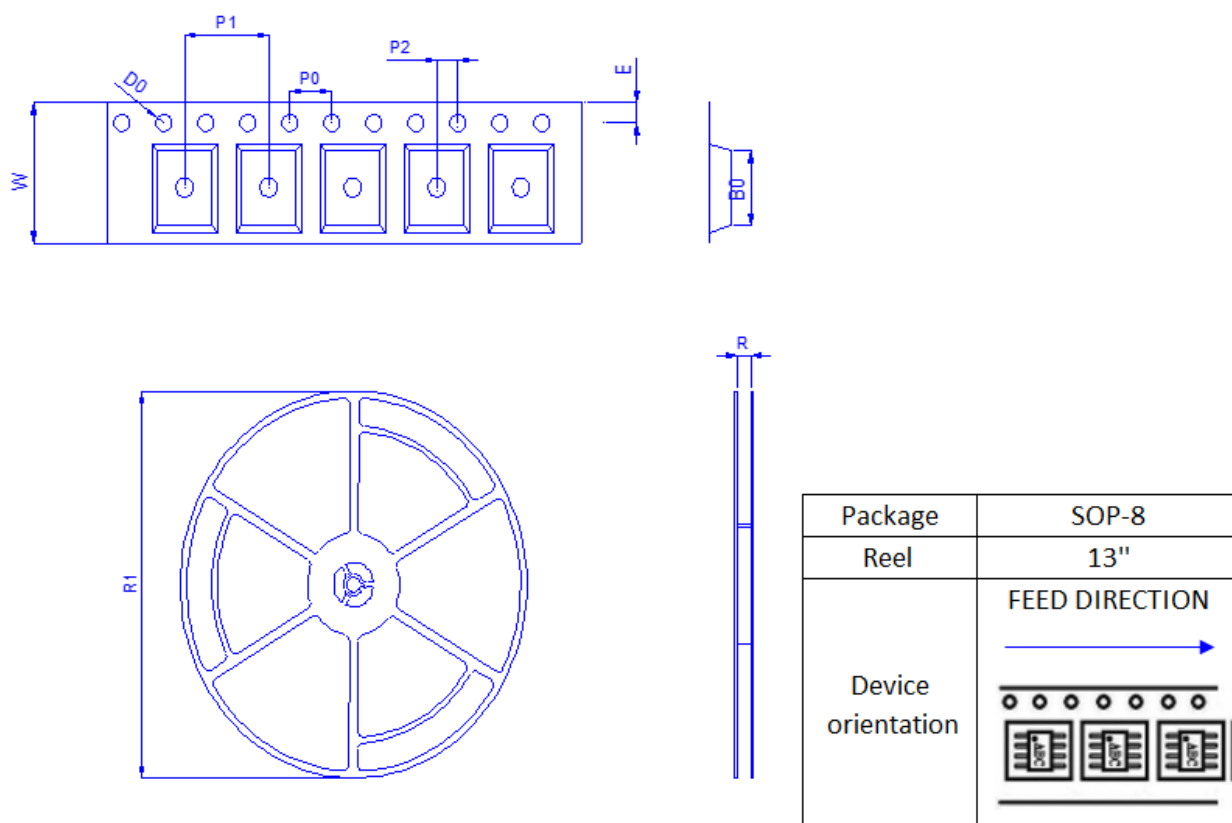
Dimension in mm

Dimension	A	B	C	D	E	F	G	H	I	J	K
Min.	4.70	3.80	5.80	0.31		1.35	0.01	0.40	0.10	0.25	0°
Typ.	4.90	3.90	6.00	0.41	1.27	1.55	0.18	0.60	0.20	0.30	
Max.	5.10	4.00	6.20	0.51		1.75	0.25	1.27	0.25	0.50	8°

Footprint



Tape&Reel Information:2500pcs/Reel



Dimension in mm

Dimension	Carrier tape							Reel	
	B0	D0	E	P0	P1	P2	W	R	R1
Typ.	6.5	1.5	1.75	4	8	2	12	12.4	330
±	0.4	0.2	0.2	0.2	0.2	0.2	0.5	REF	REF