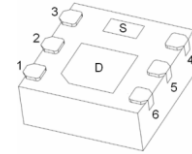


# CMSP2011A6-HF

**P-Channel**  
**RoHS Device**  
**Halogen Free**



## Features

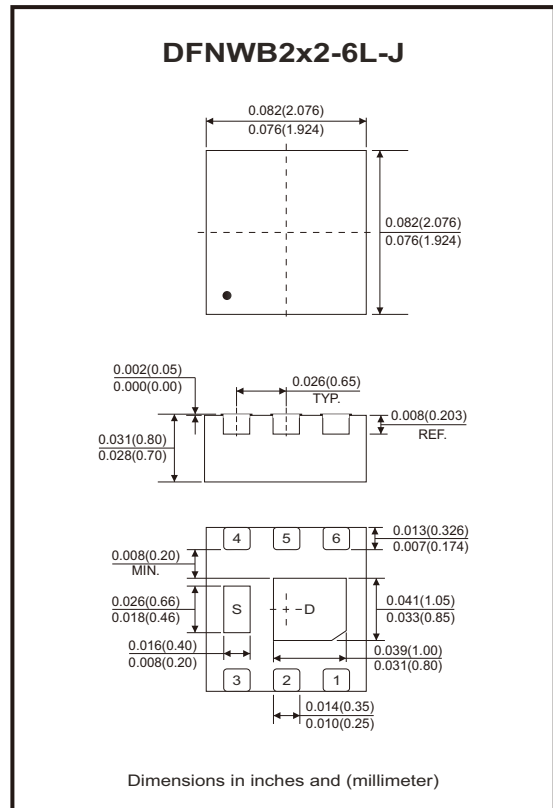
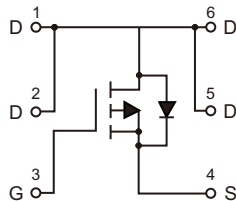
- Advanced trench MOSFET process technology.
- Ultra low on-resistance with low gate charge.

## Mechanical data

- Case: DFNWB2x2-6L-J, molded plastic.
- Mounting position: Any.

## Circuit Diagram

- D: Drain
- G: Gate
- S: Source



## Maximum Ratings (at Ta=25 °C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V <sub>DS</sub>	-20	V
Gate-source voltage	V <sub>GS</sub>	±12	
Continuous drain current	I <sub>D</sub>	-11	A
Pulsed drain current (Note 1)	I <sub>DM</sub>	-44	
Power Dissipation (Note 2)	P <sub>D</sub>	0.75	W
Thermal resistance from junction to ambient	R <sub>θJA</sub>	167	°C/W
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature range	T <sub>STG</sub>	-55 to +150	°C

## Electrical Characteristics (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -20V, V_{GS} = 0V$			-1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 12V, V_{DS} = 0V$			$\pm 100$	nA
<b>On characteristics (Note 3)</b>						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.6	-1.0	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -7.2A$		14	24	m $\Omega$
		$V_{GS} = -2.5V, I_D = -6.4A$		19	40	
Forward transconductance	$g_{FS}$	$V_{DS} = -10V, I_D = -7.2A$	10			S
<b>Dynamic characteristics (Note 4)</b>						
Input capacitance	$C_{iss}$	$V_{DS} = -6V, V_{GS} = 0V, f = 1\text{MHz}$		1580		pF
Output capacitance	$C_{oss}$			330		
Reverse transfer capacitance	$C_{rss}$			240		
Total gate charge	$Q_g$	$V_{DS} = -6V, V_{GS} = -4.5V, I_D = -10A$		35		nC
Gate-source charge	$Q_{gs}$			5		
Gate-drain charge	$Q_{gd}$			10		
<b>Switching characteristics (Note 4)</b>						
Turn-on delay time	$t_{d(on)}$	$V_{GEN} = -4.5V, V_{DD} = -10V, I_D = -1A$ $R_G = 10\Omega$		11		ns
Turn-on rise time	$t_r$			35		
Turn-off delay time	$t_{d(off)}$			30		
Turn-off fall time	$t_f$			10		
<b>Drain-source diode characteristics</b>						
Diode forward current	$I_S$				-11	A
Diode forward voltage (Note 3)	$V_{SD}$	$V_{GS} = 0V, I_{SD} = -1.9A$			-1.2	V

- Notes: 1. Pulse width limited by maximum junction temperature.  
 2. This test is performed with no heat sink at  $T_a=25^{\circ}\text{C}$ .  
 3. Pulse with  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .  
 4. Guaranteed by design, not subject to production testing.

## Rating and Characteristic Curves (CMSP2011A6-HF)

Fig.1 - Output Characteristics

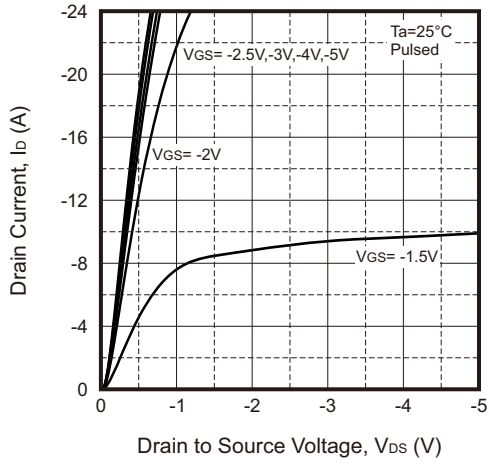


Fig.2 - Transfer Characteristics

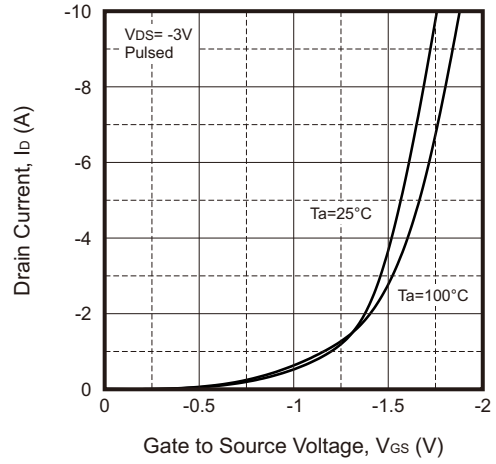


Fig.3 -  $R_{DS(ON)} - I_D$

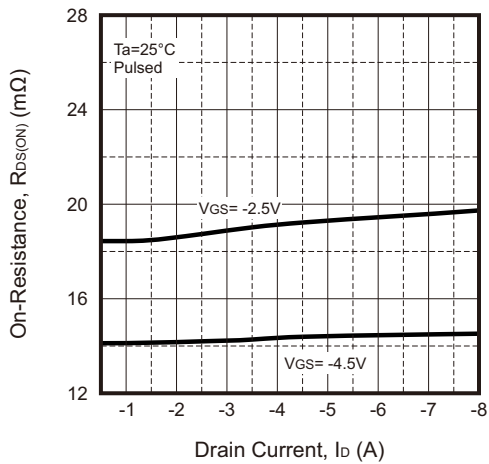


Fig.4 -  $R_{DS(ON)} - V_{GS}$

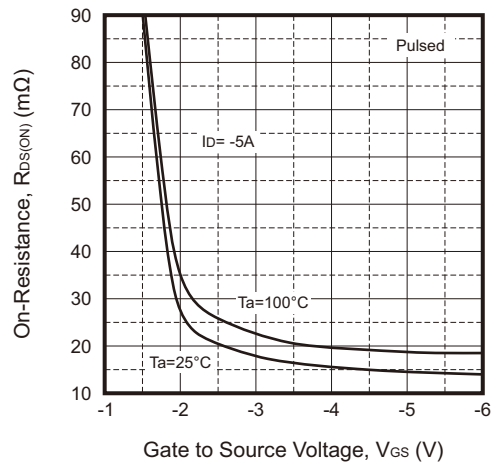


Fig.5 -  $I_S - V_{SD}$

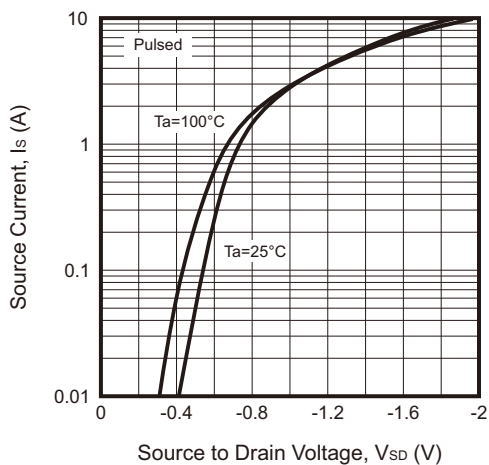
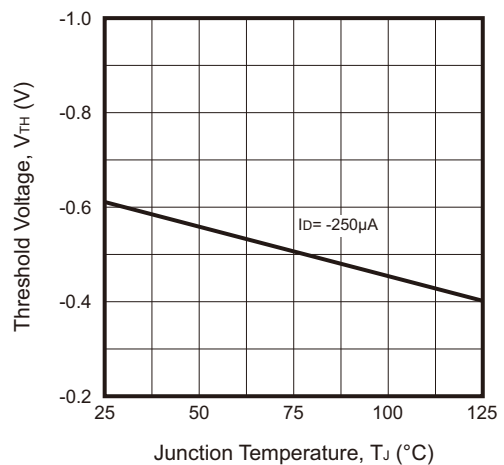
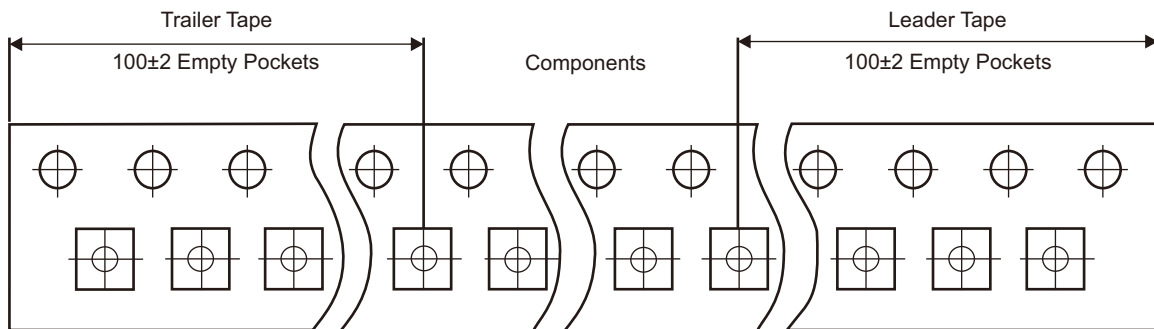
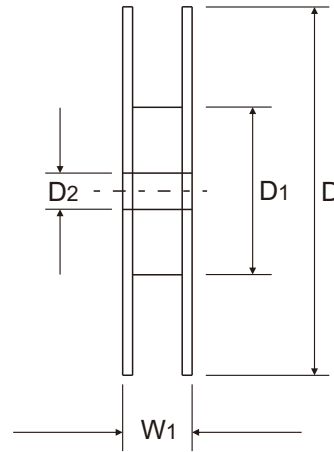
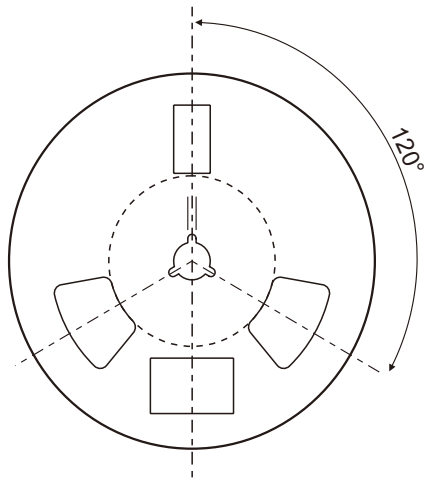
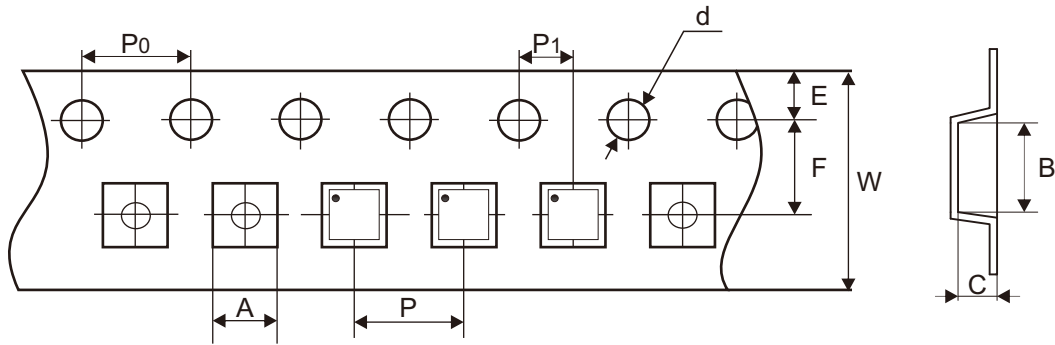


Fig.6 - Threshold Voltage



## Reel Taping Specification

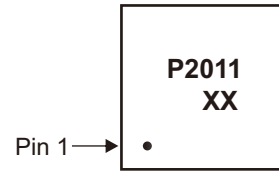


DFNWB2x2 -6L-J	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	2.30 ± 0.05	2.30 ± 0.05	1.10 ± 0.05	1.50 ± 0.10	180.00 ± 2.00	60.00 ± 1.00	13.00 ± 1.00
	(inch)	0.091 ± 0.002	0.091 ± 0.002	0.043 ± 0.002	0.059 ± 0.004	7.087 ± 0.079	2.362 ± 0.039	0.512 ± 0.039

DFNWB2x2 -6L-J	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 - 0.10	13.10 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012 - 0.004	0.516 ± 0.039

## Marking Code

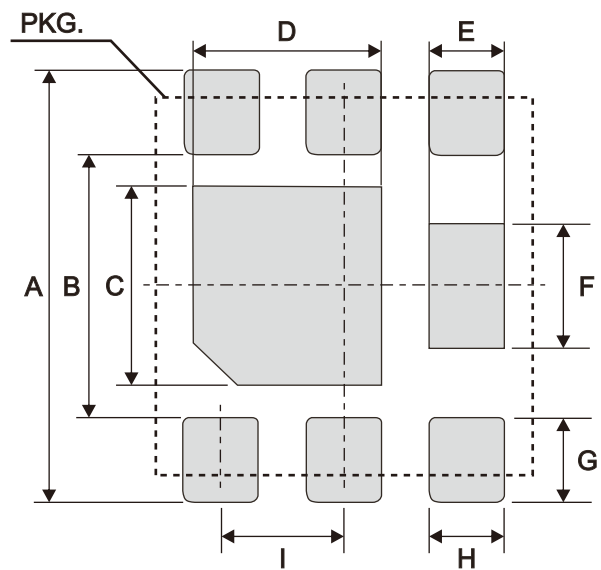
Part Number	Marking Code
CMSP2011A6-HF	P2011



xx = Control code

## Suggested P.C.B. PAD Layout

SIZE	DFNWB2x2-6L-J	
	(mm)	(inch)
A	2.30	0.091
B	1.40	0.055
C	1.05	0.041
D	1.00	0.039
E	0.40	0.016
F	0.66	0.026
G	0.45	0.018
H	0.40	0.016
I	0.65	0.026



## Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
DFNWB2x2-6L-J	3,000	7