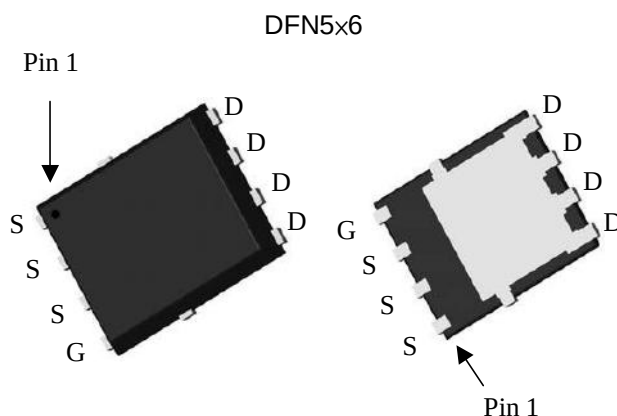


N-Channel Enhancement Mode Power MOSFET

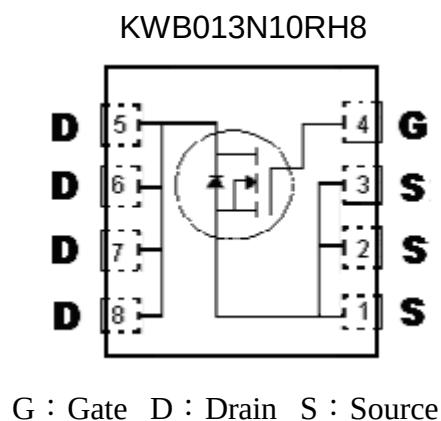
Features:

- Single Drive Requirement
- Low On-resistance
- Fast Switching Characteristic
- Repetitive Avalanche Rated
- Pb-free lead plating and Halogen-free package

Outline



Symbol



Ordering Information

Device	Package	Shipping
KWB013N10RH8	DFN 5 ×6 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	10s	Steady State	Unit
Drain-Source Voltage	V _{DS}	100		V
Gate-Source Voltage	V _{GS}	±20		
Continuous Drain Current @ T _C =25°C, V _{GS} =10V (Note 1)	I _D	42		A
Continuous Drain Current @ T _C =100°C, V _{GS} =10V (Note 1)		26.6		
Continuous Drain Current @ T _A =25°C, V _{GS} =10V (Note 2)	I _{DSM}	14.3	9.5	
Continuous Drain Current @ T _A =70°C, V _{GS} =10V (Note 2)		11.4	7.6	
Continuous Drain Current @ T _A =85°C, V _{GS} =10V (Note 2)		10.3	6.9	
Pulsed Drain Current (Note 3)	I _{DM}	168	*1	
Avalanche Current @ L=0.1mH (Note 3)	I _{AS}	42		
Avalanche Energy @ L=1mH, I _D =26A, V _{DD} =50V (Note 4)	E _{AS}	338		mJ
Repetitive Avalanche Energy @ L=0.05mH (Note 3)	E _{AR}	5	*2	
Total Power Dissipation	P _D	T _C =25°C (Note 1)	50	W
		T _C =100°C (Note 1)	20	
	P _{DSM}	T _A =25°C (Note 2)	5.7	
		T _A =70°C (Note 2)	4.0	
		T _A =85°C (Note 2)	3.6	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55~+150		°C

Thermal Data

Parameter	Symbol	Typical	Maximum	Unit
Thermal Resistance, Junction-to-ambient (Note 2)	R _{θJA}	t≤10s	18	°C/W
		Steady State	42	
Thermal Resistance, Junction-to-case	R _{θJC}	2.2	2.5	

Note : 1.The power dissipation P_D is based on T_{J(MAX)}=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

2.The value of R_{θJA} is measured with the device mounted on 1 in²FR-4 board with 2 oz. copper, in a still air environment with T_A=25°C. The power dissipation P_{DSM} is based on R_{θJA} and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

3.Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

4.100% tested by conditions of L=2mH, I_{AS}=10A, V_{GS}=10V, V_{DD}=25V

Characteristics (T_C=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	100	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	1	-	2.5		V _{DS} = V _{GS} , I _D =250μA
G _{FS} *1	-	34.6	-	S	V _{DS} =10V, I _D =20A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V
I _{DSS}	-	-	1	μA	V _{DS} =80V, V _{GS} =0V
	-	-	25		V _{DS} =80V, V _{GS} =0V, T _j =125°C
R _{DS(ON)} *1	-	9.8	13.0	mΩ	V _{GS} =10V, I _D =15A
		11.1	16.7		V _{GS} =4.5V, I _D =10A
Dynamic					
C _{iss}	-	2866	-	pF	V _{GS} =0V, V _{DS} =50V, f=1MHz
C _{oss}	-	184	-		
C _{rss}	-	8	-		
Q _g *1, 2	-	47.9	-	nC	V _{DS} =80V, V _{GS} =10V, I _D =15A
Q _{gs} *1, 2	-	8.5	-		
Q _{gd} *1, 2	-	5.5	-		
t _{d(ON)} *1, 2	-	18	-	ns	V _{DD} =50V, I _D =10A, V _{GS} =10V, R _G =3Ω
t _r *1, 2	-	16.2	-		
t _{d(OFF)} *1, 2	-	60.2	-		
t _f *1, 2	-	7.4	-		
R _g	-	1.1	-	Ω	f=1MHz
Source-Drain Diode					
I _S *1	-	-	42	A	
I _{SM} *3	-	-	168		
V _{SD} *1	-	0.81	1.2	V	I _S =15A, V _{GS} =0V
t _{rr}	-	34	-	ns	I _F =15A, dI _F /dt=100A/μs
Q _{rr}	-	54	-	nC	

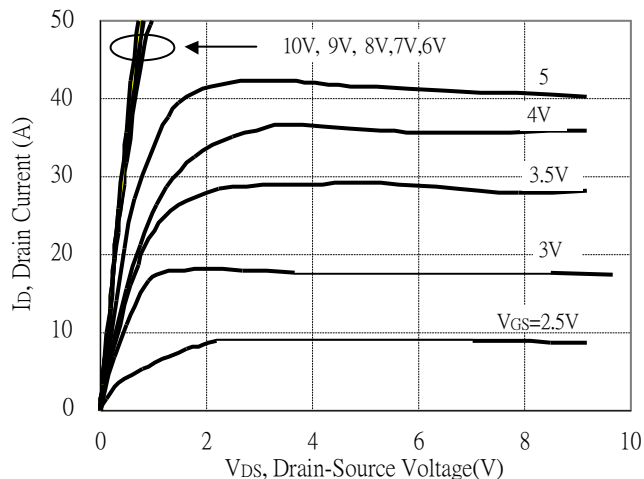
Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

*2.Independent of operating temperature

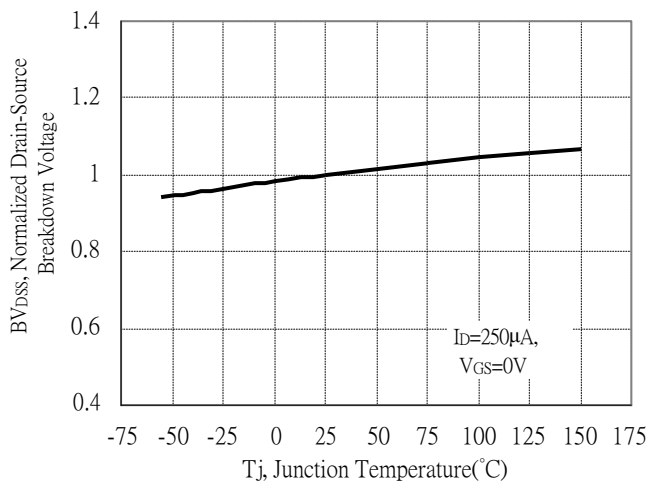
*3.Pulse width limited by maximum junction temperature.

Typical Characteristics

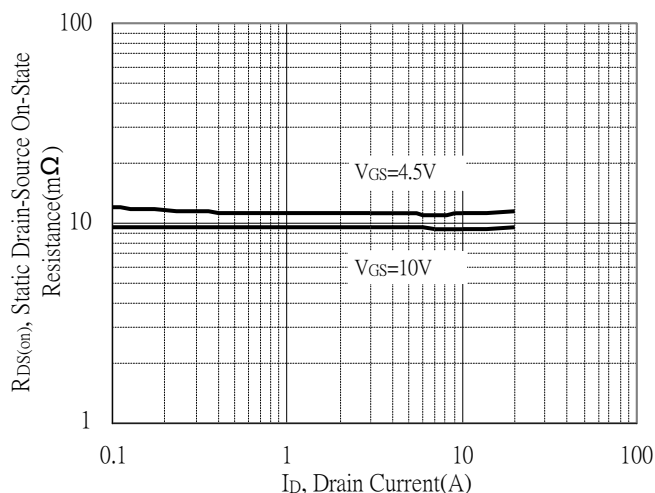
Typical Output Characteristics



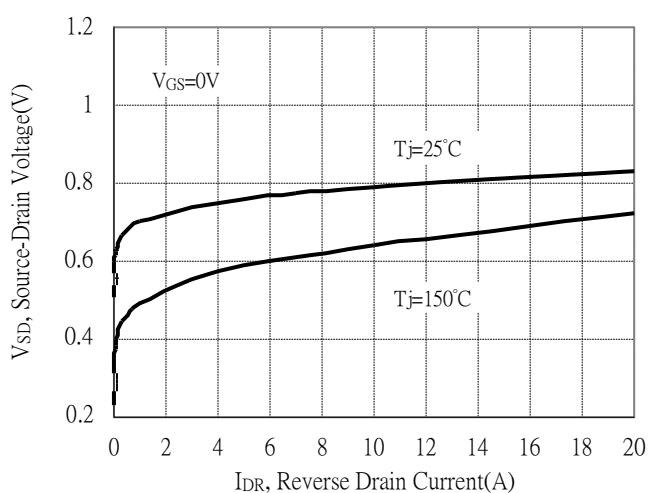
Breakdown Voltage vs Ambient Temperature



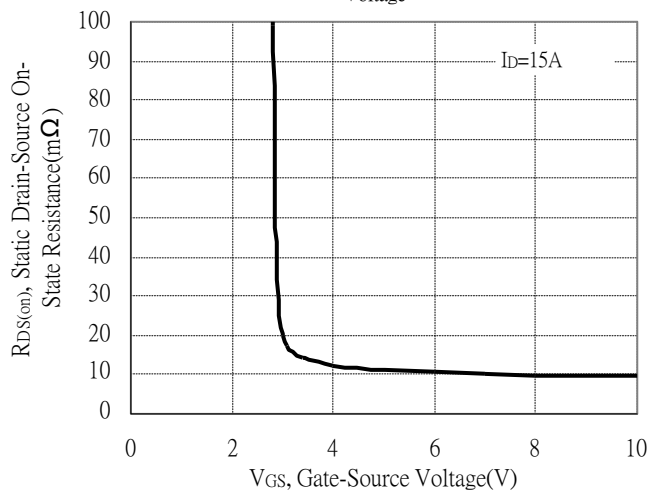
Static Drain-Source On-State resistance vs Drain Current



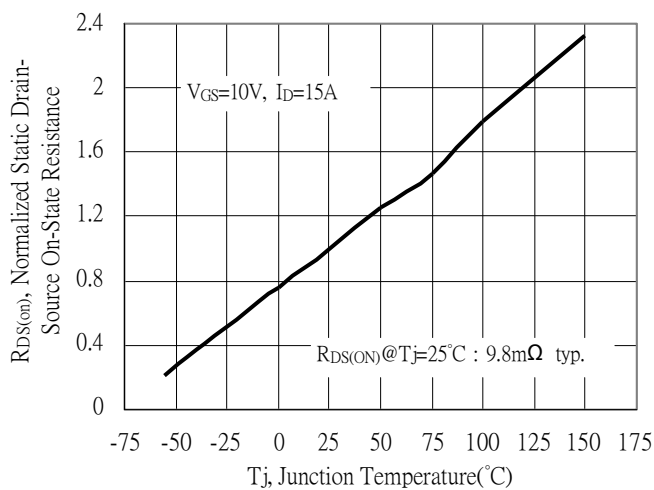
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

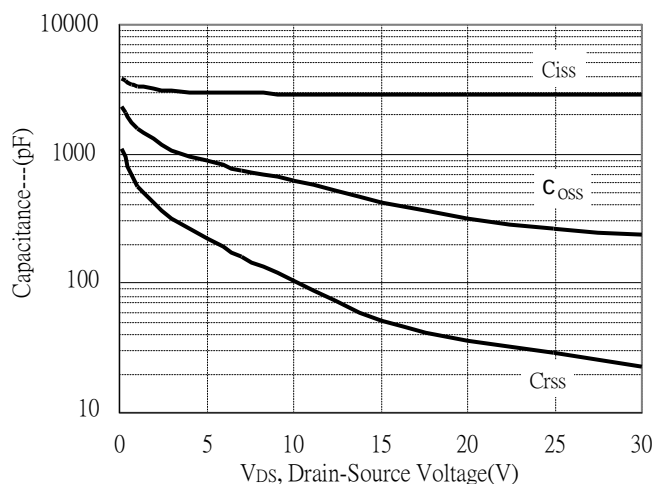


Drain-Source On-State Resistance vs Junction Temperature

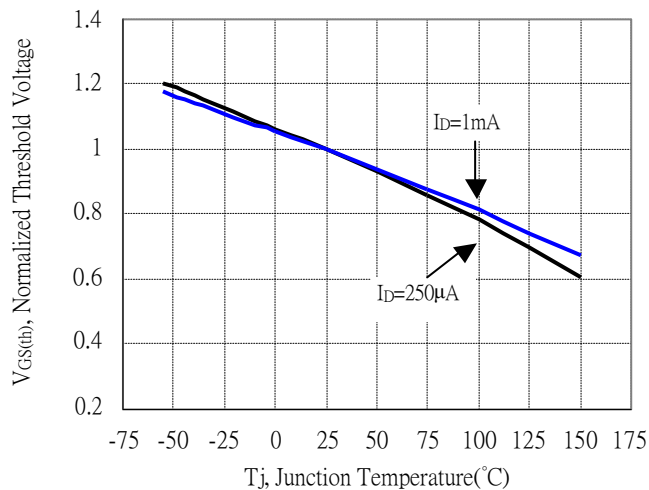


Typical Characteristics(Cont.)

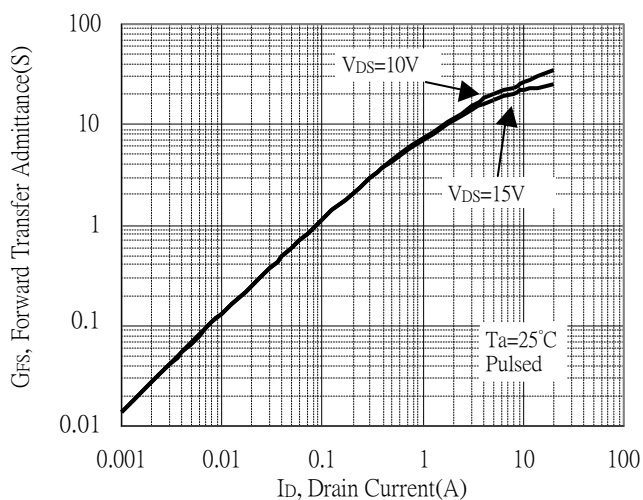
Capacitance vs Drain-to-Source Voltage



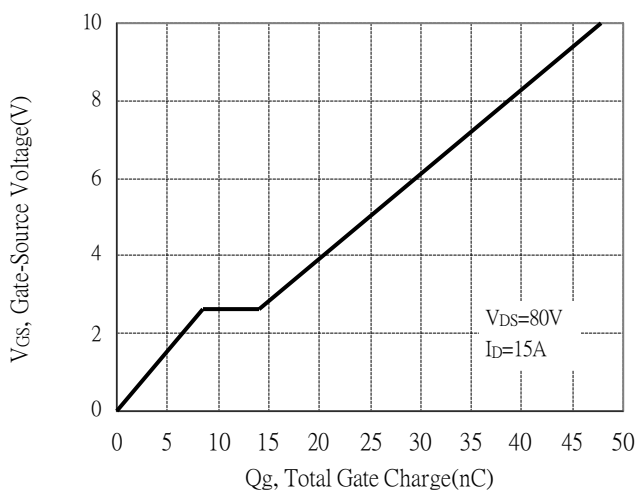
Threshold Voltage vs Junction Temperature



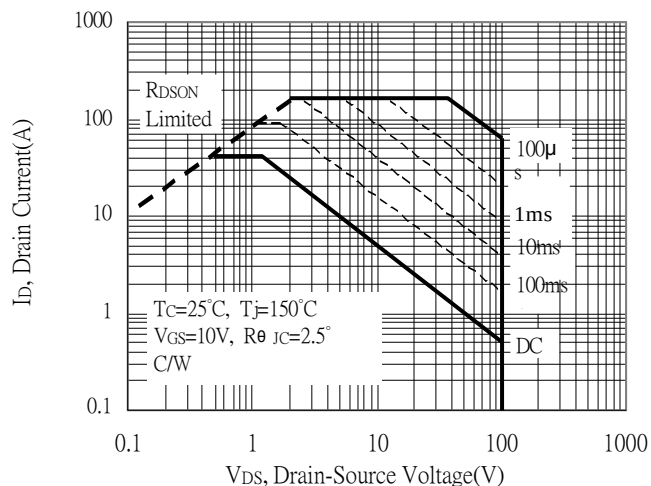
Forward Transfer Admittance vs Drain Current



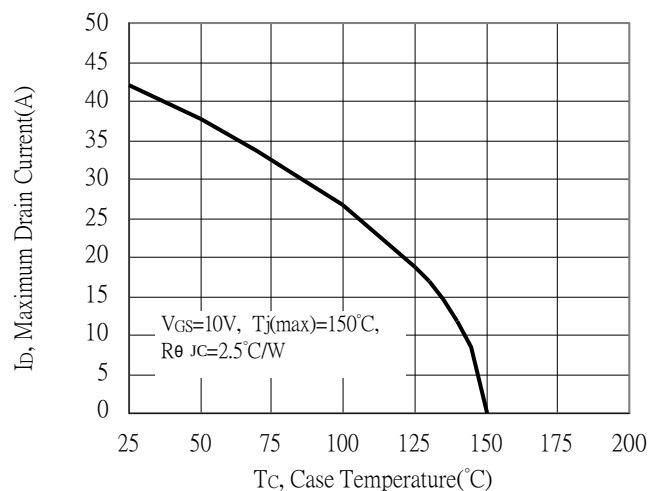
Gate Charge Characteristics



Maximum Safe Operating Area

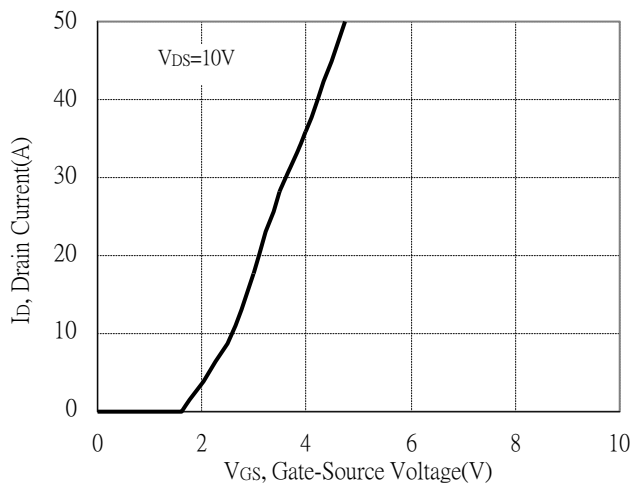


Maximum Drain Current vs Case Temperature

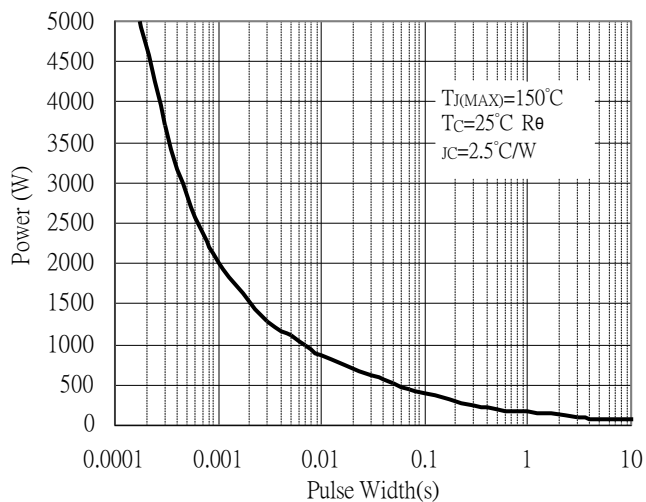


Typical Characteristics(Cont.)

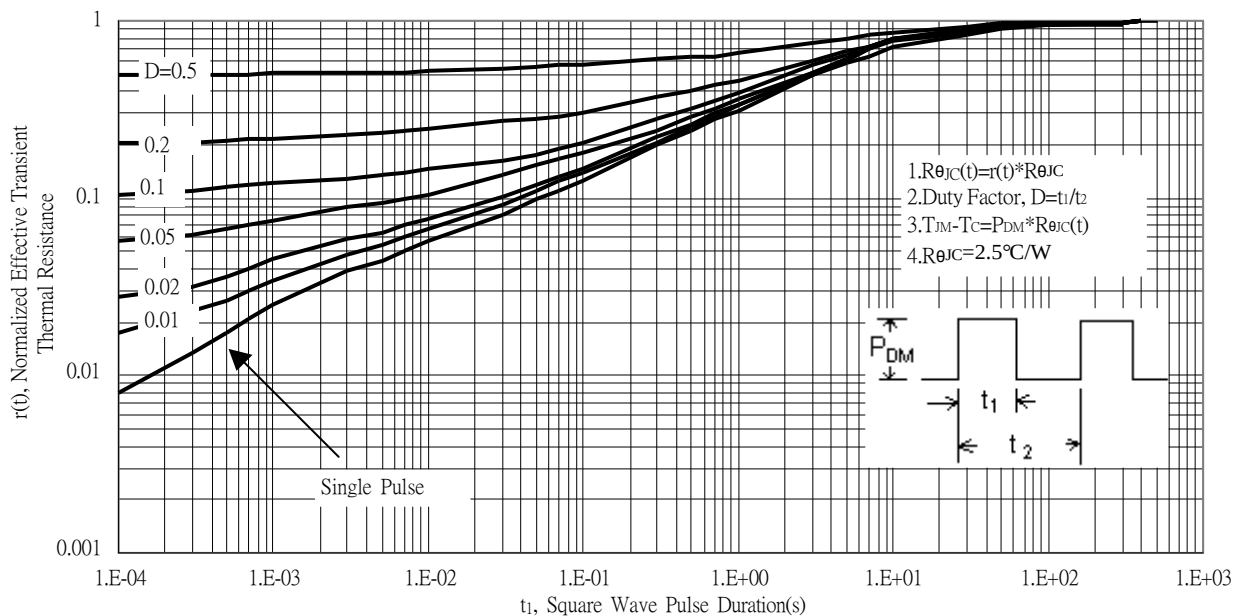
Typical Transfer Characteristics



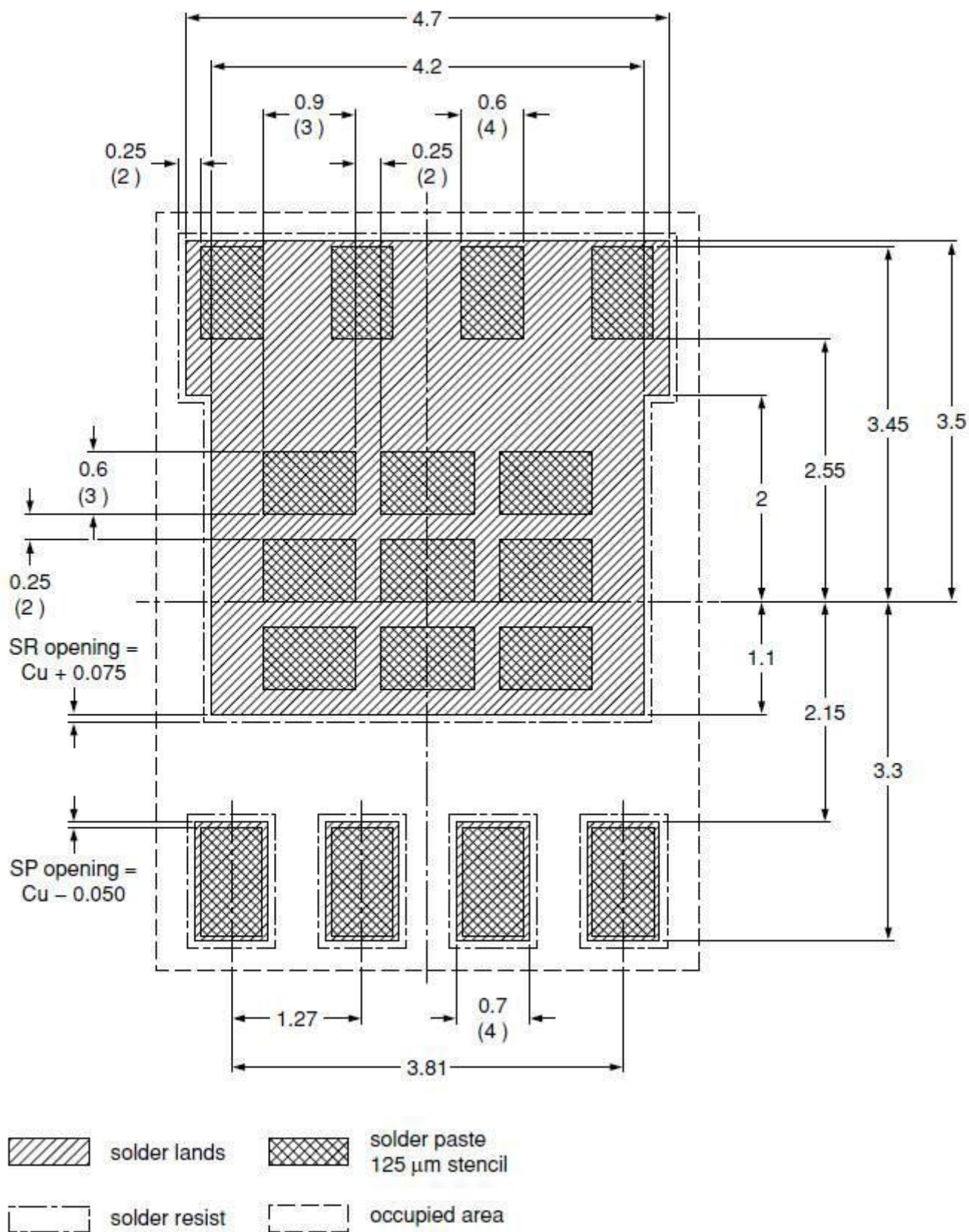
Single Pulse Power Rating, Junction to Case



Transient Thermal Response Curves

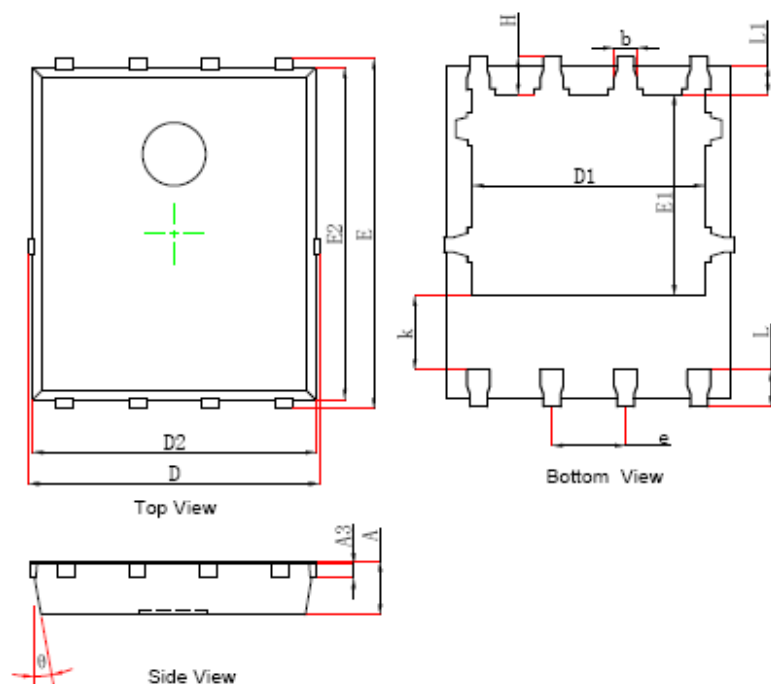


Recommended Soldering Footprint & Stencil Design

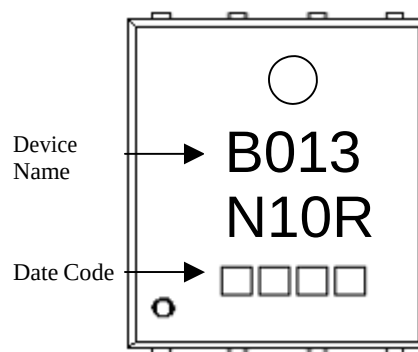


unit : mm

DFN5x6 Dimension



Marking :



8-Lead DFN5x6 Plastic
 Package Code : H8

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039	k	1.190	1.390	0.047	0.055
A3	0.254	REF	0.010	REF	b	0.350	0.450	0.014	0.018
D	4.944	5.096	0.195	0.201	e	1.270	TYP.	0.050	TYP.
E	5.974	6.126	0.235	0.241	L	0.559	0.711	0.022	0.028
D1	3.910	4.110	0.154	0.162	L1	0.424	0.576	0.017	0.023
E1	3.375	3.575	0.133	0.141	H	0.574	0.726	0.023	0.029
D2	4.824	4.976	0.190	0.196	θ	10°	12°	10°	12°
E2	5.674	5.826	0.223	0.229					