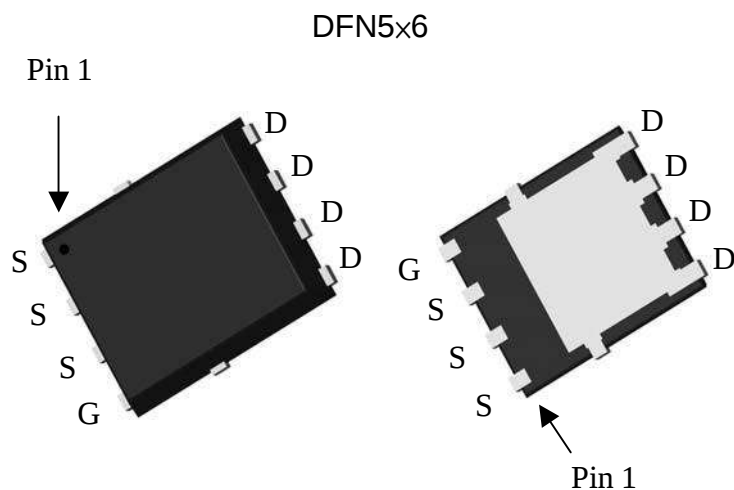


N-Channel Enhancement Mode Power MOSFET

Features:

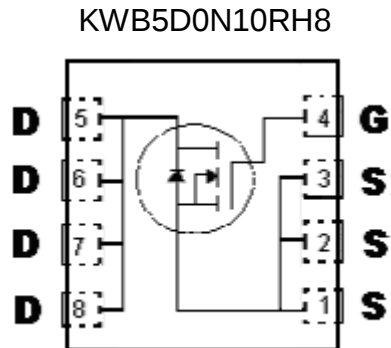
- Single Drive Requirement
- Low On-resistance
- Fast Switching Characteristic
- Pb-free lead plating and Halogen-free package

Outline



BV _{DSS}		100V
I _D @V _{GS} =10V, T _C =25°C		54A
I _D @V _{GS} =10V, T _A =25°C		18A
R _{DS(on)} (TYP)	V _{GS} =10V, I _D =30A	5.5mΩ
	V _{GS} =4.5V, I _D =20A	6.7mΩ

Symbol



G : Gate D : Drain S : Source

Ordering Information

Device	Package	Shipping
KWB5D0N10RH8	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	54		A
Continuous Drain Current @ T _C =100°C, V _{GS} =10V (Note 1)			34.2		
Continuous Drain Current @ T _A =25°C, V _{GS} =10V (Note 2)		I _{DSM}	18	12	
Continuous Drain Current @ T _A =70°C, V _{GS} =10V (Note 2)			14.5	9.6	
Continuous Drain Current @ T _A =85°C, V _{GS} =10V (Note 2)			13	8.7	
Pulsed Drain Current (Note 3)		I _{DM}	216 *1		
Avalanche Current @ L=0.1mH (Note 3)		I _{AS}	90		
Avalanche Energy @ L=1mH, I _D =36A, V _{DD} =50V (Note 4)		E _{AS}	648		mJ
Repetitive Avalanche Energy @ L=0.05mH (Note 3)		E _{AR}	5 *2		
Total Power Dissipation	T _C =25°C (Note 1)	P _D	50		W
	T _C =100°C (Note 1)		20		
	T _A =25°C (Note 2)	P _{DSM}	5.7	2.5	
	T _A =70°C (Note 2)		4.0	1.8	
	T _A =85°C (Note 2)		3.6	1.6	
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)	t≤10s	R _{θJA}	18	22	°C/W
	Steady State		42	50	
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 in² FR-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=0.1mH, I_{AS}=30A, V_{GS}=10V, V_{DD}=50V

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	-	46.9	-	S	V _{DS} =10V, I _D =20A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
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	-	5.5	7.5	mΩ	V _{GS} =10V, I _D =30A
		6.7	9.3		V _{GS} =4.5V, I _D =20A
Dynamic					
C _{iss}	-	6629	-	pF	V _{GS} =0V, V _{DS} =50V, f=1MHz
C _{oss}	-	380	-		
C _{rss}	-	8	-		
Q _g *1, 2	-	101	-	nC	V _{DS} =80V, V _{GS} =10V, I _D =30A
Q _{gs} *1, 2	-	20.5	-		
Q _{gd} *1, 2	-	14.7	-		
t _{d(ON)} *1, 2	-	31.6	-	ns	V _{DD} =50V, I _D =30A, V _{GS} =10V, R _G =1Ω
t _r *1, 2	-	23	-		
t _{d(OFF)} *1, 2	-	94	-		
t _f *1, 2	-	13.4	-		
R _g	-	1.4	-	Ω	f=1MHz
Source-Drain Diode					
I _S *1	-	-	54	A	
I _{SM} *3	-	-	216		
V _{SD} *1	-	0.81	1.2	V	I _S =20A, V _{GS} =0V
t _{rr}	-	45.5	-	ns	I _F =20A, dI _F /dt=100A/μs
Q _{rr}	-	86.7	-	nC	

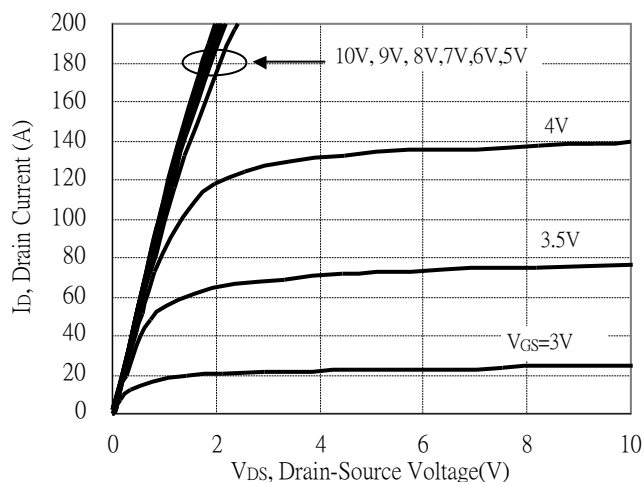
Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

*2.Independent of operating temperature

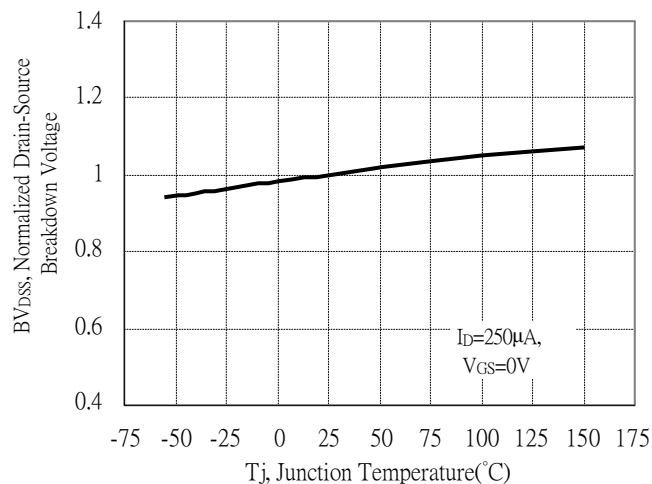
*3.Pulse width limited by maximum junction temperature.

Typical Characteristics

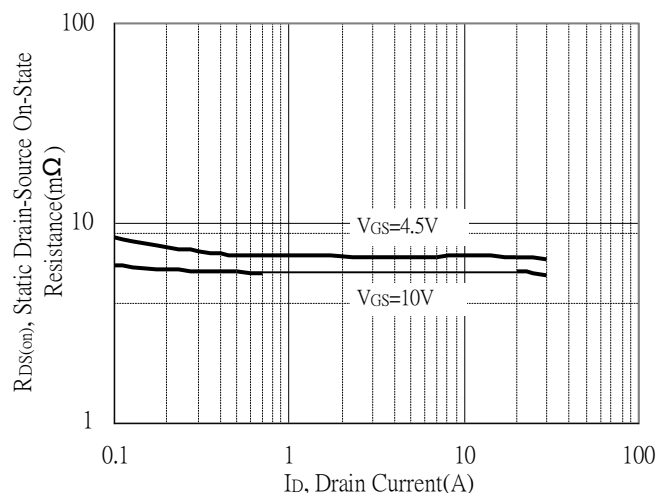
Typical Output Characteristics



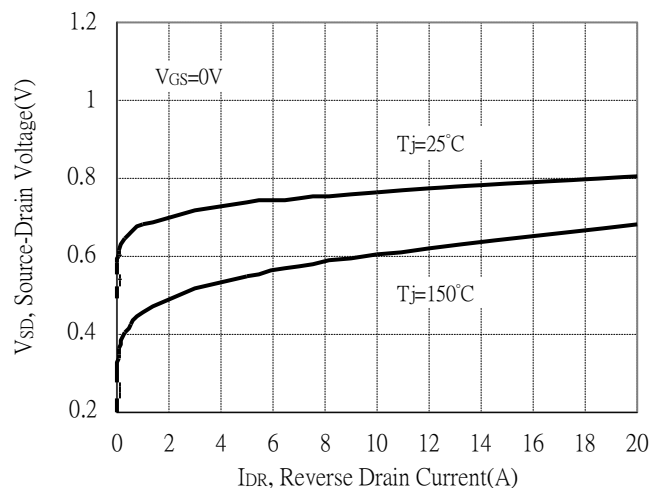
Breakdown Voltage vs Ambient Temperature



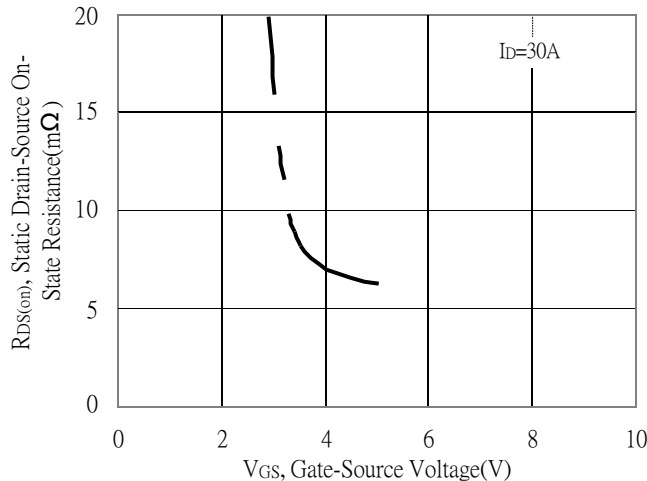
Static Drain-Source On-State resistance vs Drain Current



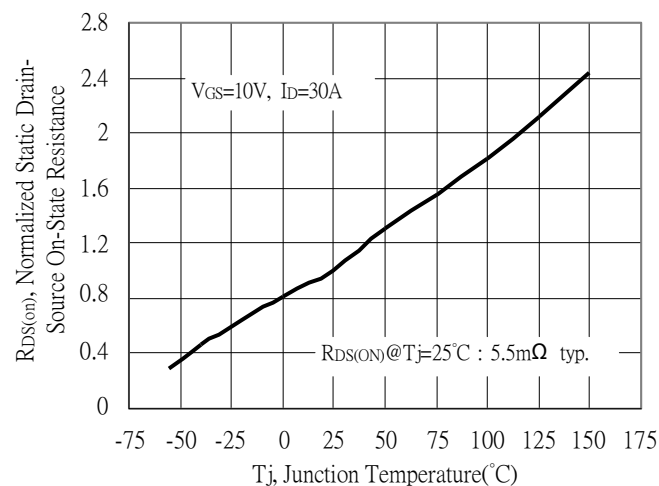
Reverse Drain Current vs Source-Drain Voltage



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

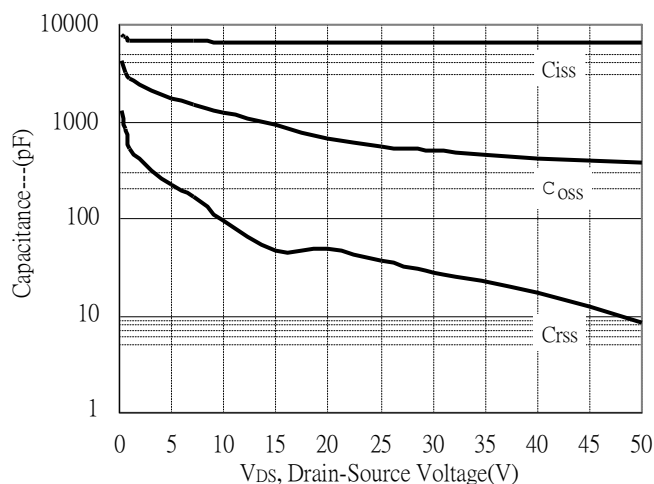


Drain-Source On-State Resistance vs Junction Temperature

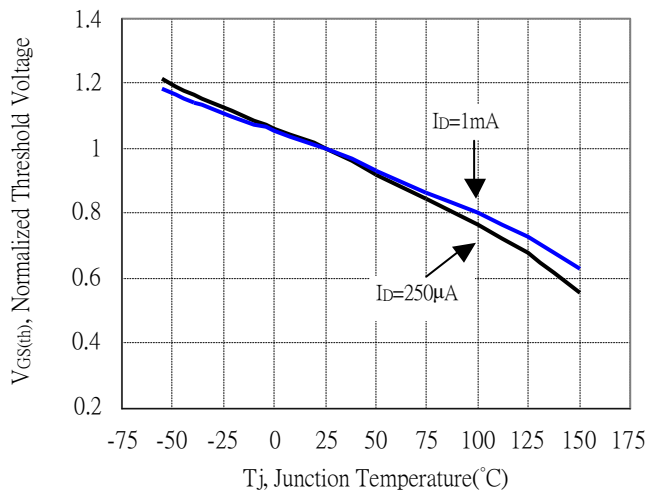


Typical Characteristics(Cont.)

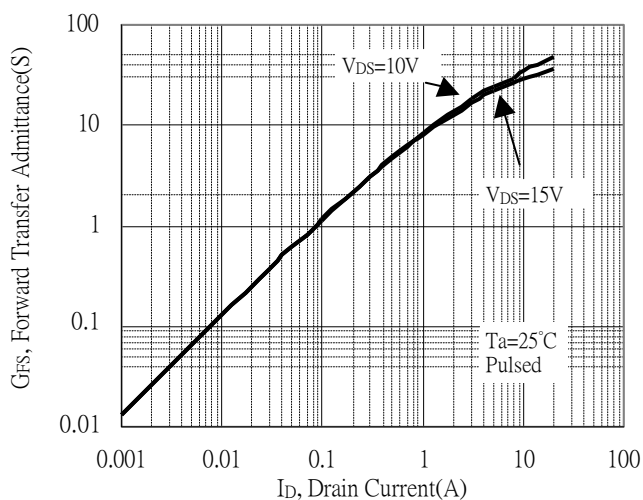
Capacitance vs Drain-to-Source Voltage



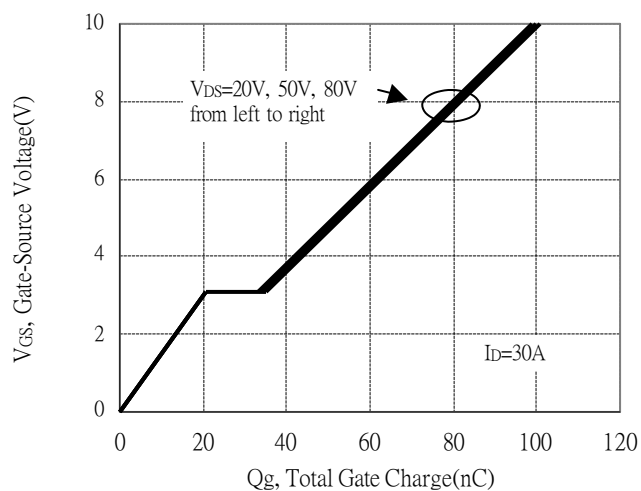
Threshold Voltage vs Junction Temperature



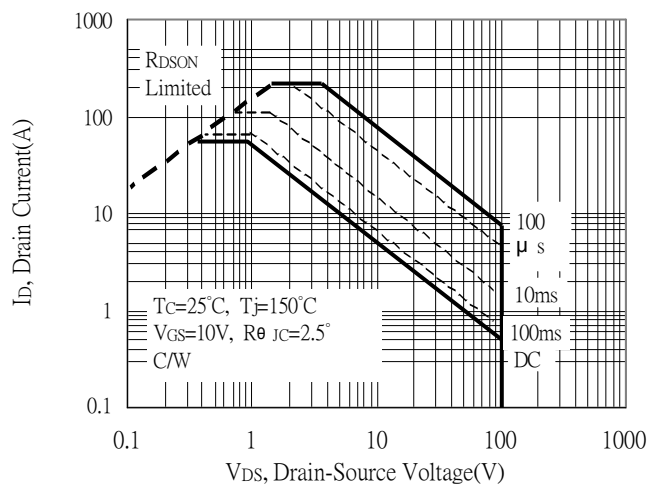
Forward Transfer Admittance vs Drain Current



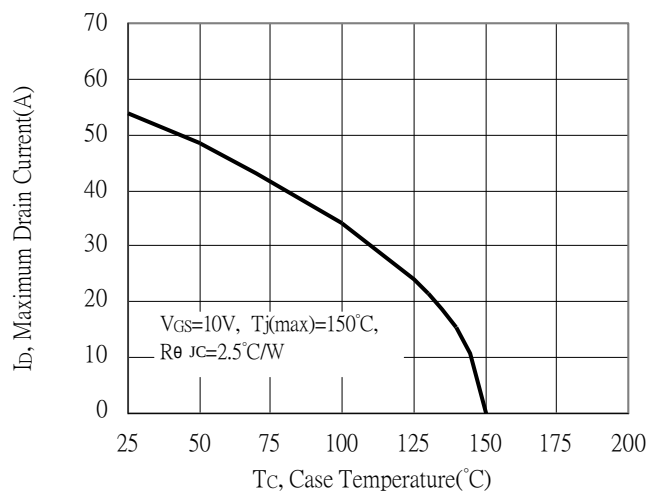
Gate Charge Characteristics



Maximum Safe Operating Area

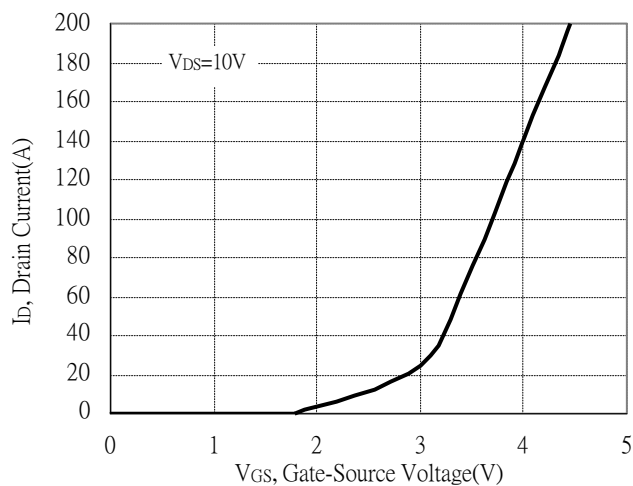


Maximum Drain Current vs Case Temperature

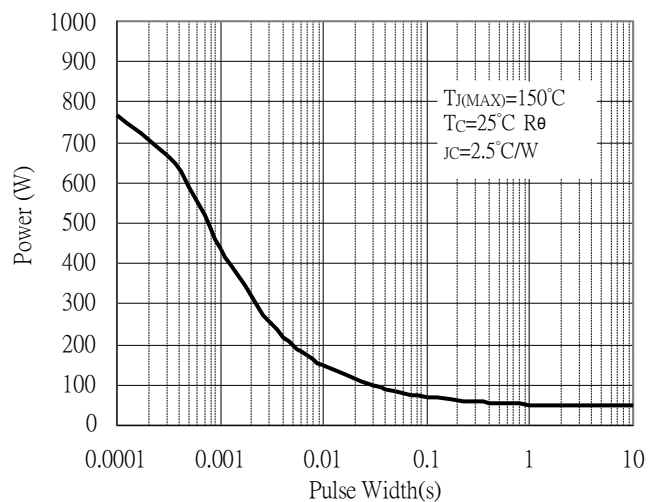


Typical Characteristics(Cont.)

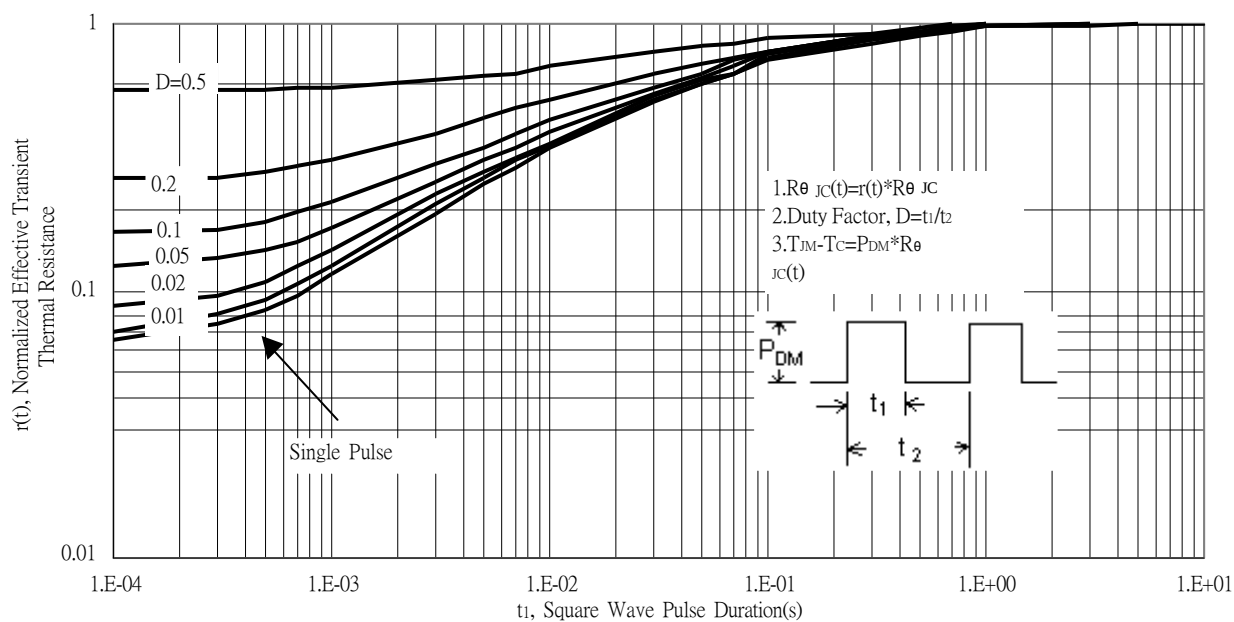
Typical Transfer Characteristics



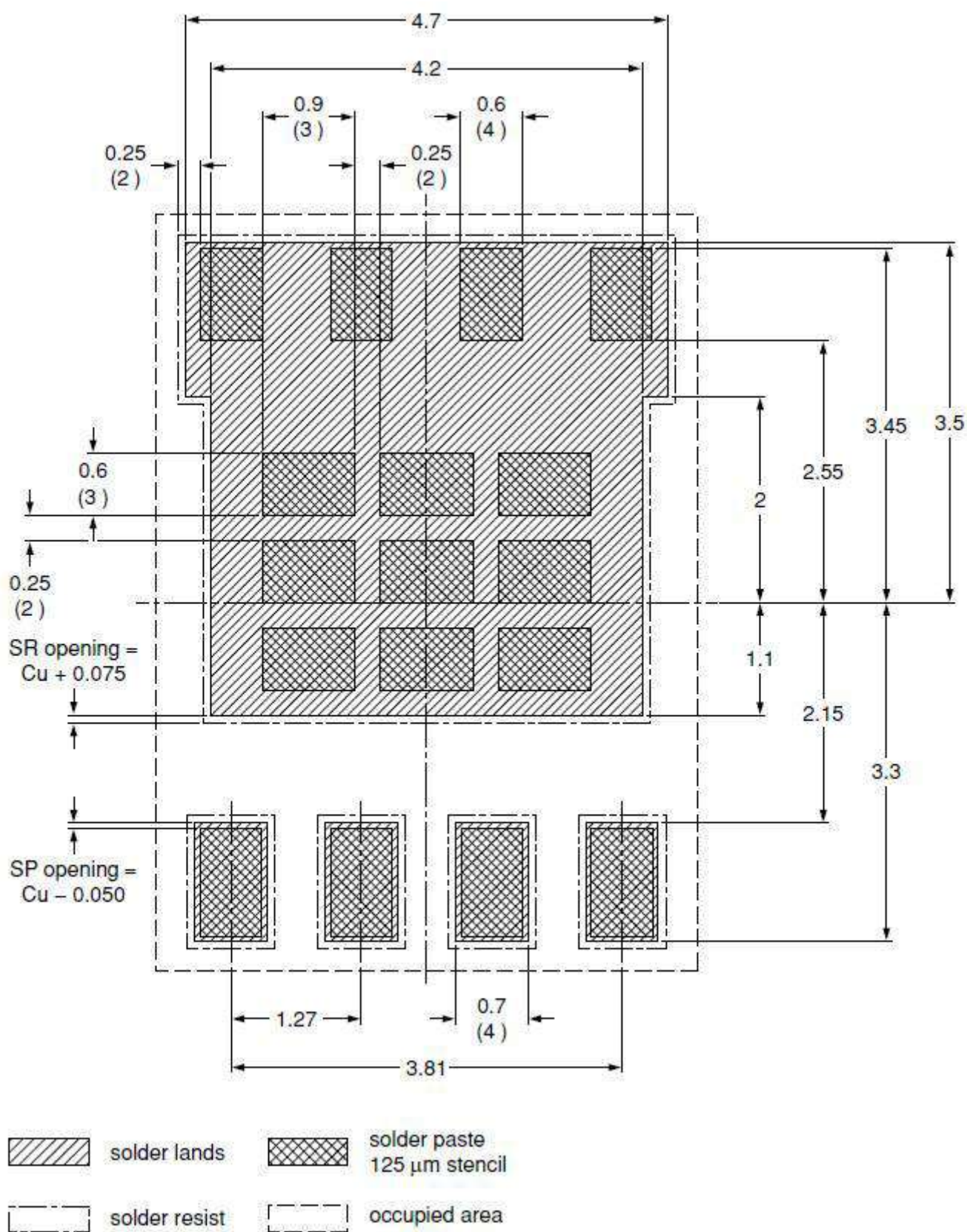
Single Pulse Power Rating, Junction to Case



Transient Thermal Response Curves

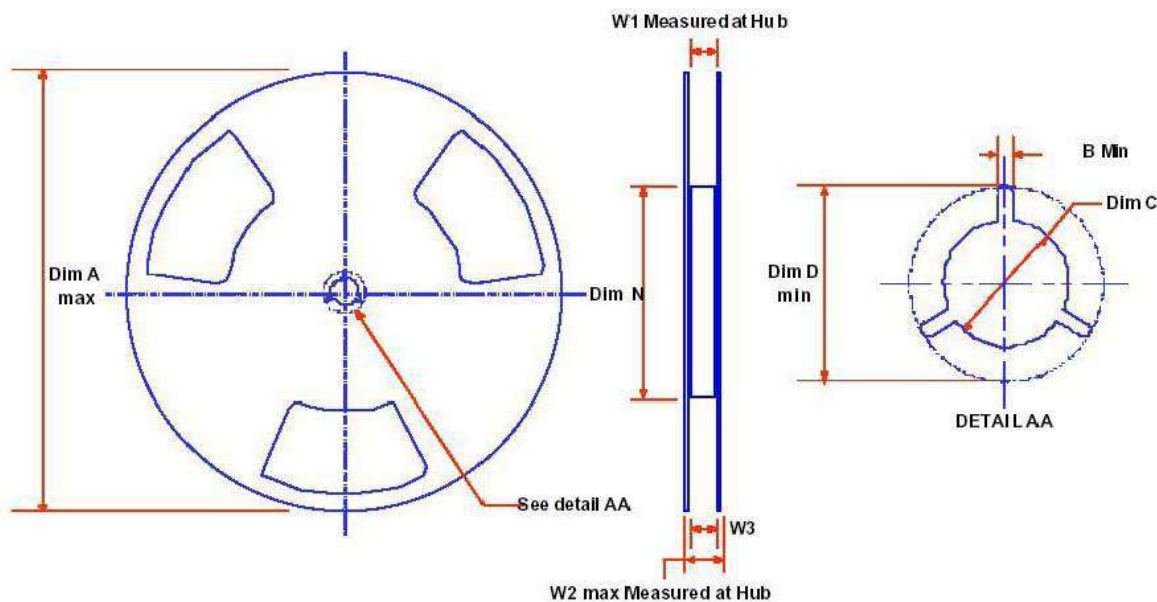


Recommended Soldering Footprint & Stencil Design



unit : mm

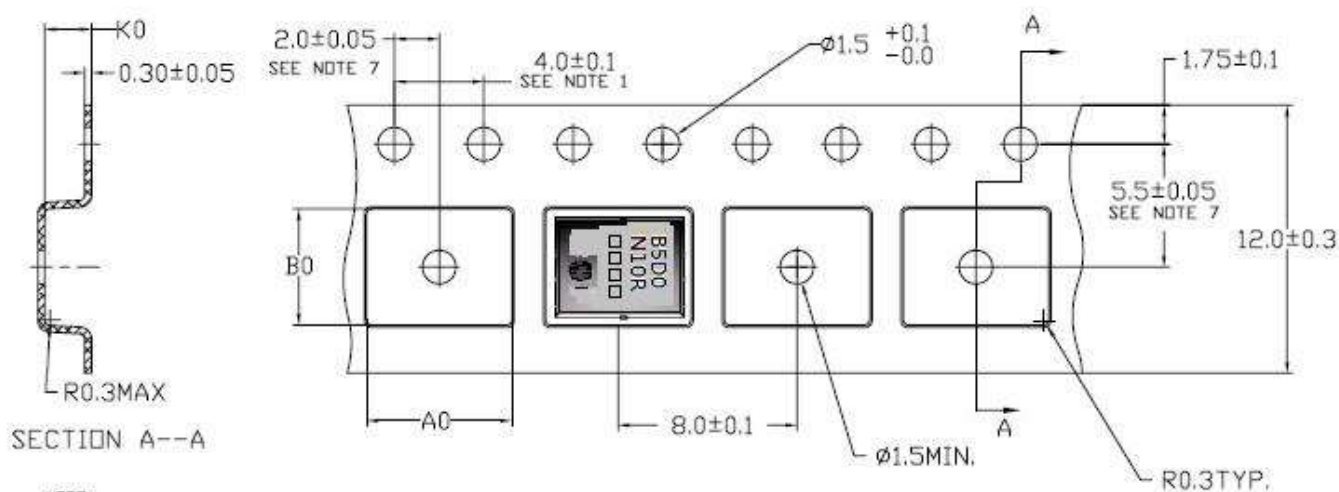
Reel Dimension



Dimensions are in inches and millimeters

Tape Size	Reel Option	Dim A	Dim B	Dim C	Dim D	Dim N	Dim W1	Dim W2	Dim W3 (LSL-USL)
12mm	13" Dia (STD/199Z)	13.00 330+/-1	0.059 1.5 Min.	0.512 13.0 Min.	0.796 20.2(ref.)	7.00 178+0/-2	0.488 +0.078/-0.000 12.4 +2/0	0.724 18.4(ref.)	0.469 - 0.606 11.9 - 15.4

Carrier Tape Dimension

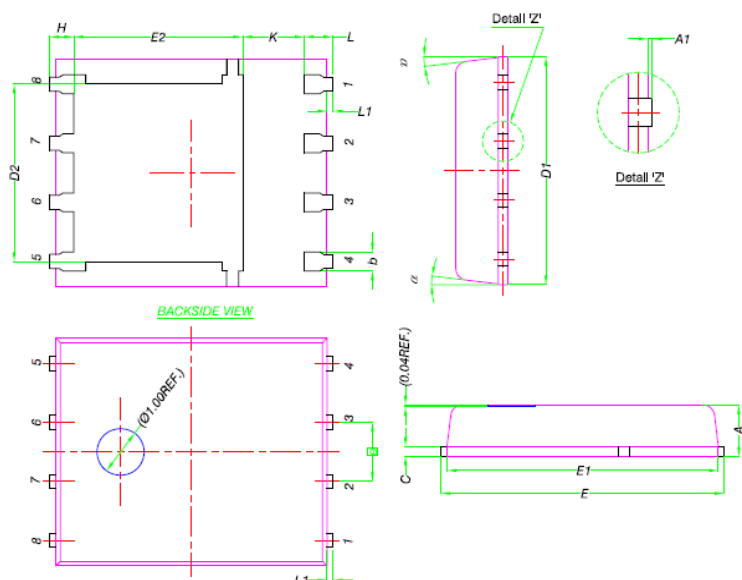


NOTE:

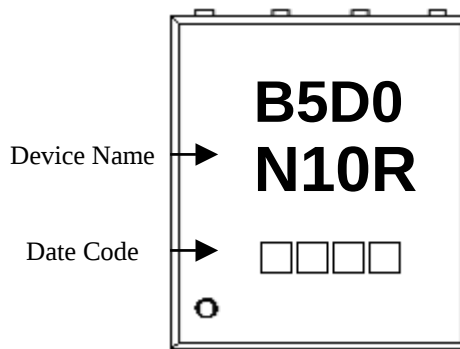
1. 10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ± 0.2
2. CAMBER NOT TO EXCEED 1mm IN 100mm, NONCUMULATIVE OVER 250mm.
3. MATERIAL: BLACK STATIC DISSIPATIVE PS.(POLYSTYRENE)
4. ALL DIMENSIONS ARE IN MILLIMETERS (UNLESS OTHERWISE SPECIFIED)
5. A0 AND B0 MEASURED ON A PLANE 0.3mm ABOVE THE BOTTOM OF THE POCKET
6. K0 MEASURED FROM A PLANE ON THE INSIDE BOTTOM OF THE POCKET TO THE TOP SURFACE OF THE CARRIER
7. POCKET POSITION RELATIVE TO SPROCKET HOLE MEASURED AS TRUE POSITION OF POCKET, NOT POCKET HOLE
8. SURFACE RESISTIVITY
1X10E4~1X10E11 OHMS/SQ;
1X10E4~1X10E6 OHMS/SQ. For Fairchild Only

A0=6.5±0.1
B0=5.3±0.1
K0=1.4±0.1

DFN5x6 Dimension



Marking:



8-Lead DFN5x6 Plastic Package
 Package Code : H8

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043	E2	3.38	3.78	0.133	0.149
A1	0.00	0.05	0.000	0.002	e	1.27	BSC	0.050	BSC
b	0.33	0.51	0.013	0.020	H	0.41	0.61	0.016	0.024
C	0.20	0.30	0.008	0.012	K	1.10	-	0.043	-
D1	4.80	5.00	0.189	0.197	L	0.51	0.71	0.020	0.028
D2	3.61	3.96	0.142	0.156	L1	0.06	0.20	0.002	0.008
E	5.90	6.10	0.232	0.240	θ	8°	12°	8°	12°
E1	5.70	5.80	0.224	0.228					