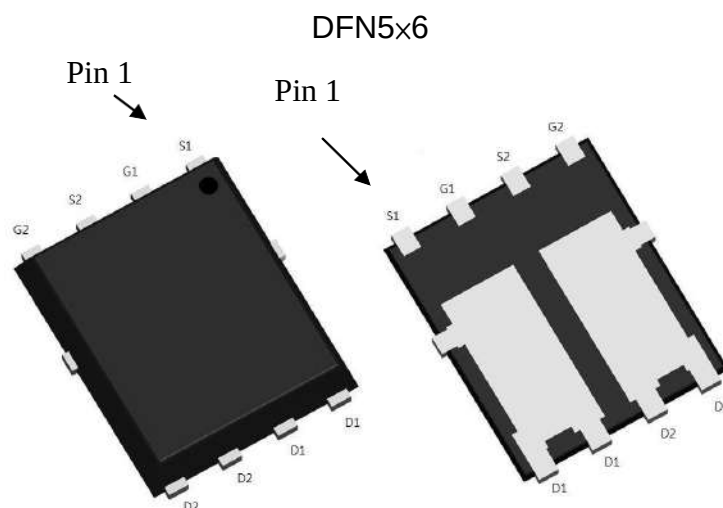


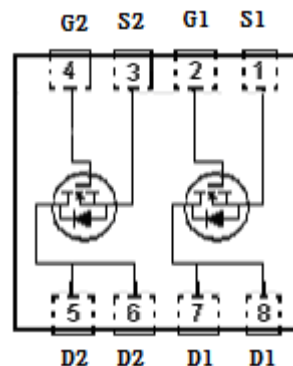
Dual N-Channel Enhancement Mode Power MOSFET

Features:

- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- Pb-free lead plating and Halogen-free package



BV_{DSS}	30V
I_D@V_{GS}=10V, T_C=25°C	44.9A
I_D@V_{GS}=10V, T_C=100°C	28.4A
I_D@V_{GS}=10V, T_A=25°C	9.7A
I_D@V_{GS}=10V, T_A=70°C	7.8A
R_{DS(ON)}@V_{GS}=10V, I_D=30A	5.3mΩ(typ)
R_{DS(ON)}@V_{GS}=4.5V, I_D=20A	7.1mΩ(typ)



G : Gate D : Drain S : Source

Ordering Information

Device	Package	Shipping
KPRB4D0A03BD	DFN 5 x6 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Absolute Maximum Ratings (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current @T _C =25°C, V _{GS} =10V (Note 1)	I _D	44.9	A
Continuous Drain Current @T _C =100°C, V _{GS} =10V (Note 1)		28.4	
Continuous Drain Current @T _A =25°C, V _{GS} =10V (Note 2)	I _{DSM}	9.7	
Continuous Drain Current @T _A =70°C, V _{GS} =10V (Note 2)		7.8	
Pulsed Drain Current @ V _{GS} =10V (Note 3)	I _{DM}	180	
Avalanche Current @L=0.1mH (Note 3)	I _{AS}	40	mJ
Single Pulse Avalanche Energy @ L=0.1mH, I _D =40Amps, V _{DD} =15V (Note 5)	E _{AS}	80	
Repetitive Avalanche Energy (Note 3)	E _{AR}	3.1	W
Power Dissipation	P _D	31	
		12.4	
	P _{DSM}	1.5	
		1.0	
Operating Junction and Storage Temperature	T _J , T _{stg}	-55~+150	°C

*Drain current limited by maximum junction temperature

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{θJC}	4	°C/W
Thermal Resistance, Junction-to-ambient, max (Note 4)	R _{θJA}	85	

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 value in any given application depends on the user's specific board design. The power dissipation P_{DSM} is based on R_{θJA} and the maximum allowed junction temperature of 150°C.

3. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

4. When mounted on 1 in² copper pad of FR-4 board ; 125°C/W when mounted on minimum copper pad.

5. 100% tested by conditions of L=0.5mH, I_{AS}=15A, V_{GS}=10V, V_{DD}=15V.

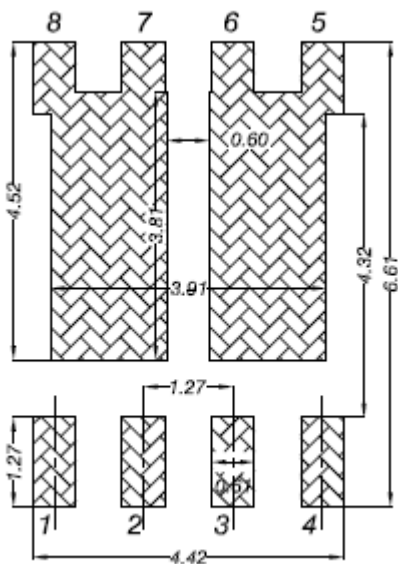
Characteristics (T_J=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	30	-	-	V	V _{GS} =0V, I _D =250μA
ΔBV _{DSS} /ΔT _J	-	0.03	-	V/°C	Reference to 25°C, I _D =250μA
V _{GS(th)}	1.0	-	2.5	V	V _{DS} = V _{GS} , I _D =250μA
*G _{FS}	-	15.2	-	S	V _{DS} =10V, I _D =7A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
I _{DSS}	-	-	1	μA	V _{DS} =24V, V _{GS} =0V
	-	-	10		V _{DS} =24V, V _{GS} =0V, T _J =85°C

*R _{DS(ON)}	-	5.3	7	mΩ	V _{GS} =10V, I _D =30A
	-	7.1	10		V _{GS} =4.5V, I _D =20A
Dynamic					
*Q _g	-	33.4	47	nC	V _{DS} =15V, I _D =30A, V _{GS} =10V
*Q _{gs}	-	4.8	-		
*Q _{gd}	-	8.6	-		
*t _{d(ON)}	-	13.8	22	ns	V _{DS} =15V, I _D =19A, V _{GS} =10V, R _G =1Ω
*t _r	-	19.4	29		
*t _{d(OFF)}	-	47.2	65		
*t _f	-	10.6	22		
C _{iss}	-	1538	2000	pF	V _{GS} =0V, V _{DS} =15V, f=1MHz
C _{oss}	-	287	375		
C _{rss}	-	212	300		
R _g	0.5	1.6	5	Ω	f=1MHz
Source-Drain Diode					
*I _S	-	-	26	A	
*I _{SM}	-	-	104		
*V _{SD}	-	0.82	1.2	V	I _S =20A, V _{GS} =0V
*t _{rr}	-	14	23	ns	V _{GS} =0V, I _F =18A, dI _F /dt=100A/μs
*Q _{rr}	-	7	12	nC	

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

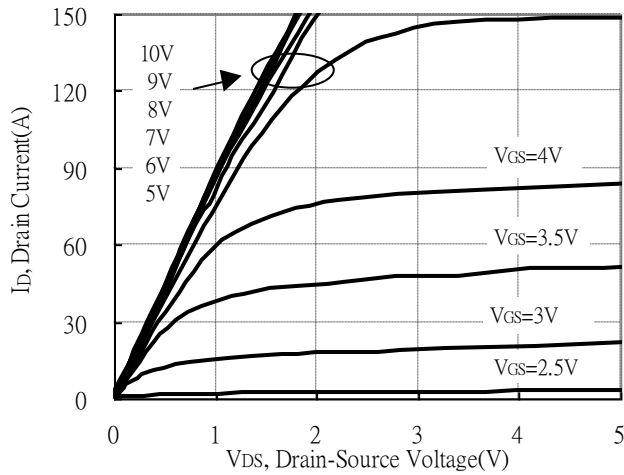
Recommended Soldering Footprint



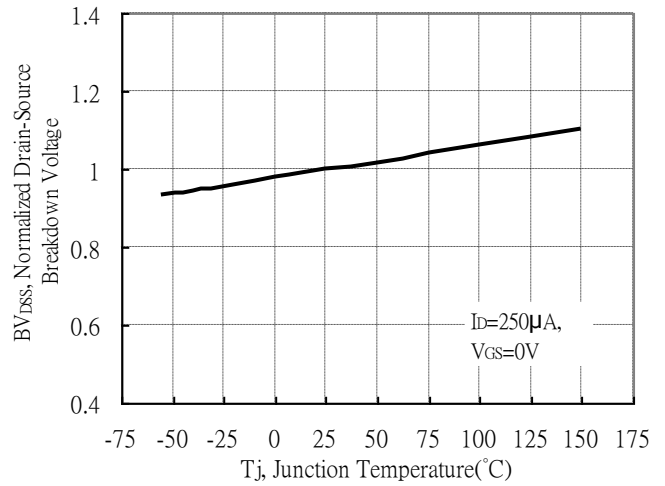
unit : mm

Typical Characteristics

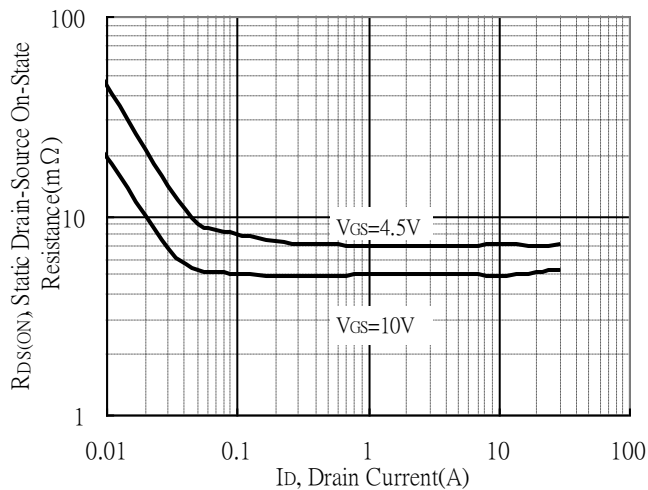
Typical Output Characteristics



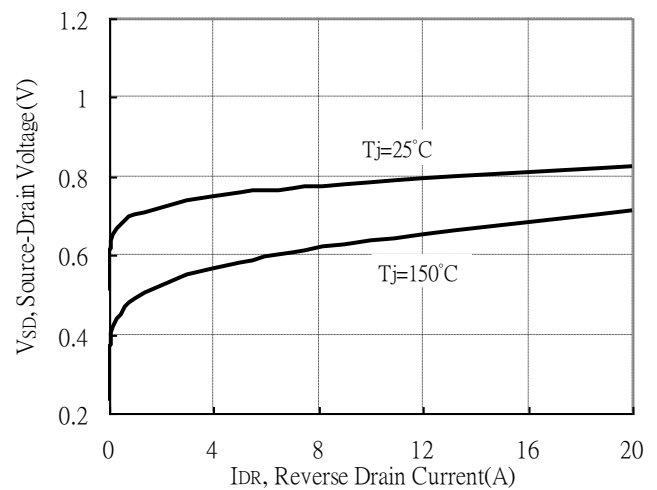
Brekdown Voltage vs Ambient Temperature



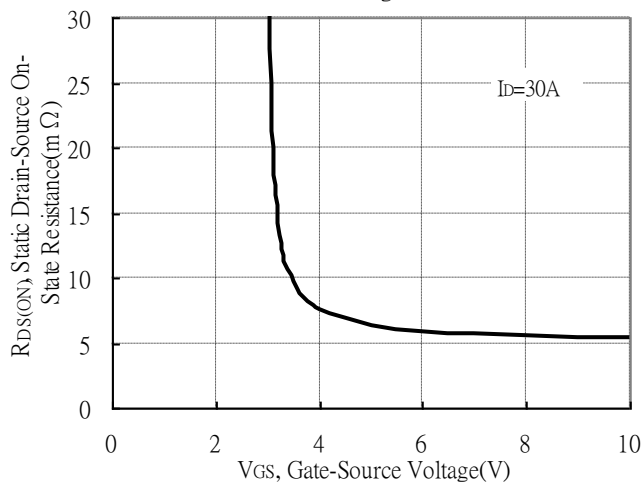
Static Drain-Source On-State resistance vs Drain Current



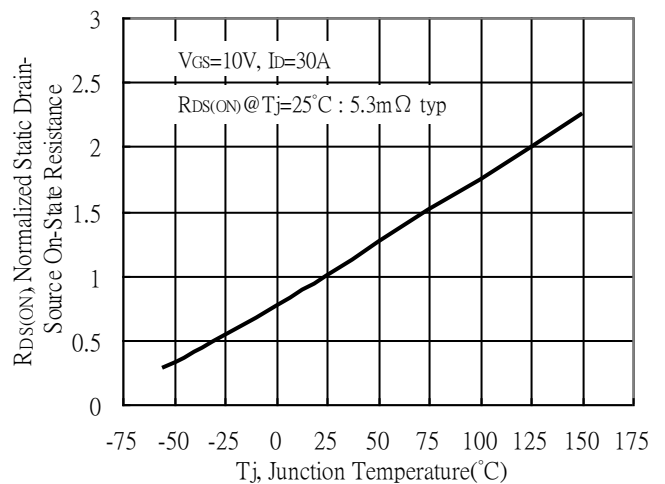
Reverse Drain Current vs Source-Drain Voltage



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

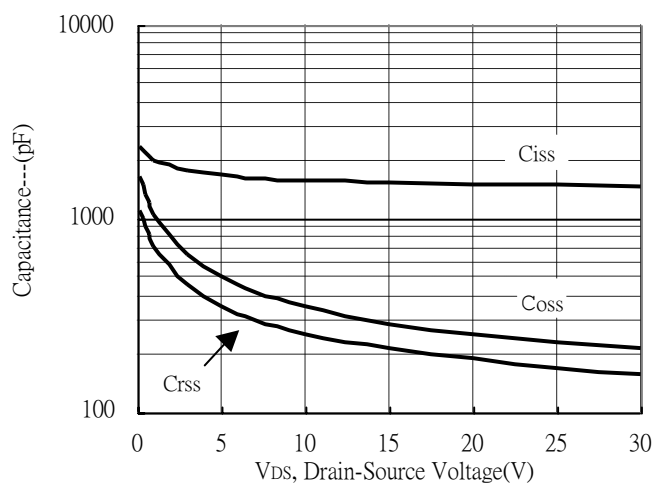


Drain-Source On-State Resistance vs Junction Temperature

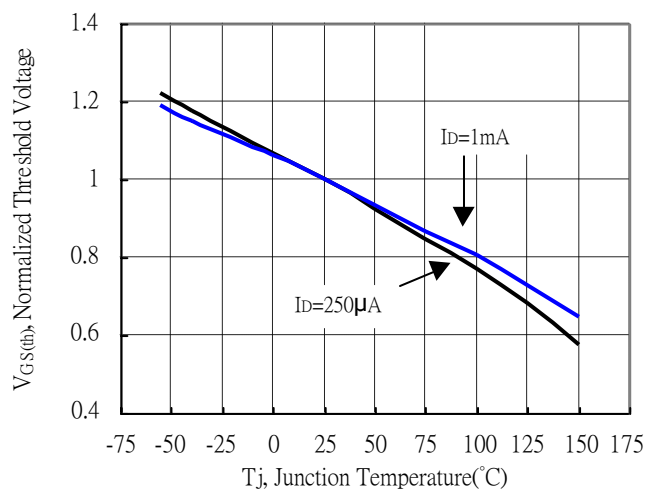


Typical Characteristics (Cont.)

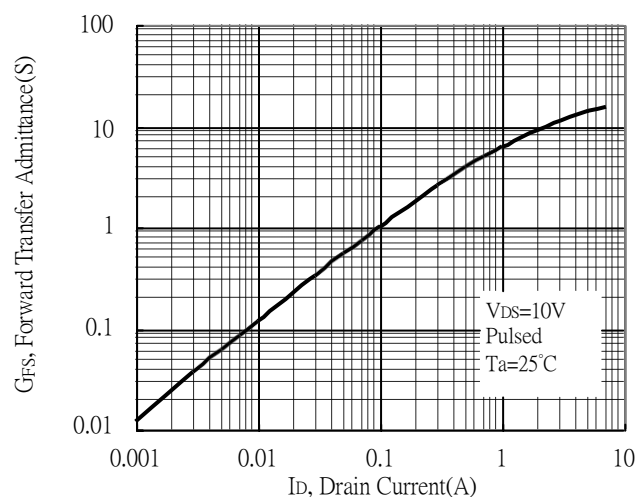
Capacitance vs Drain-to-Source Voltage



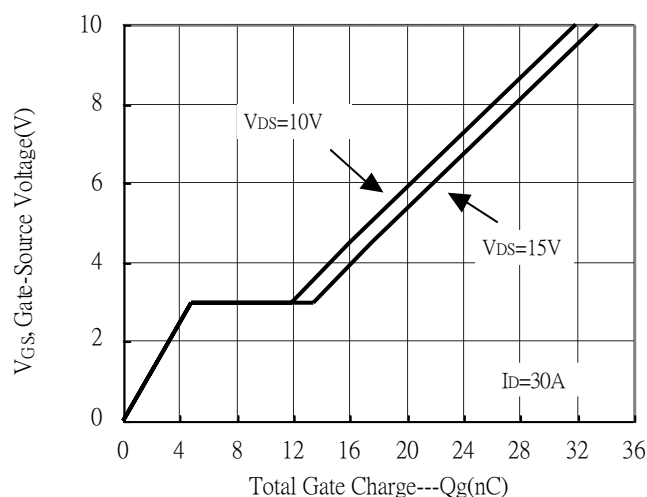
Normalized Threshold Voltage vs Junction Temperature



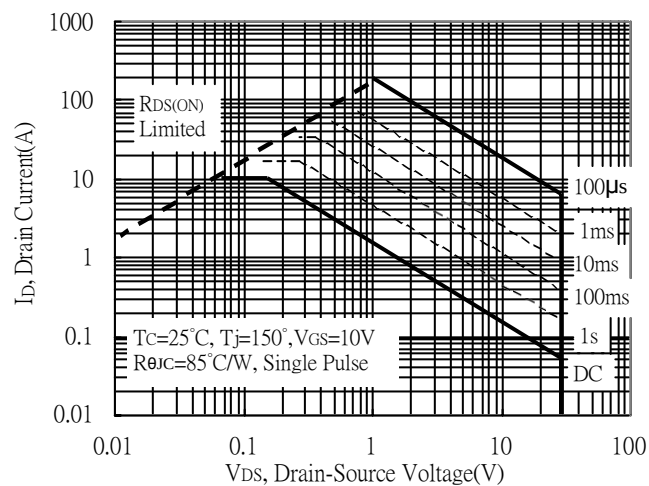
Forward Transfer Admittance vs Drain Current



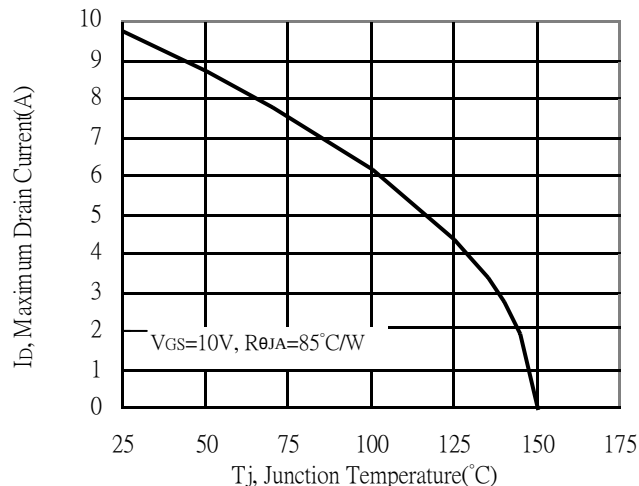
Gate Charge Characteristics



Maximum Safe Operating Area

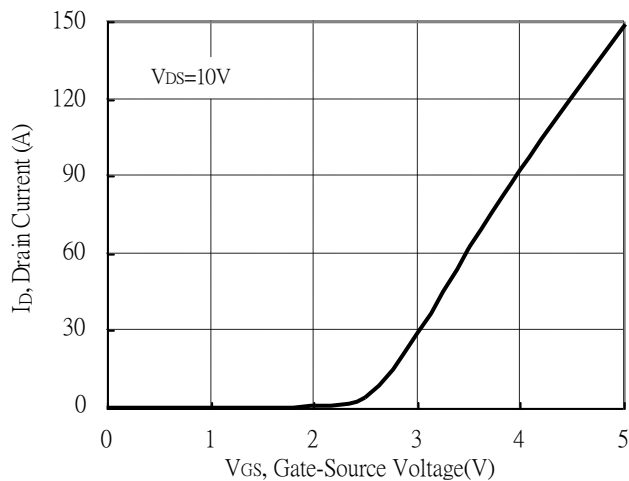


Maximum Drain Current vs Junction Temperature

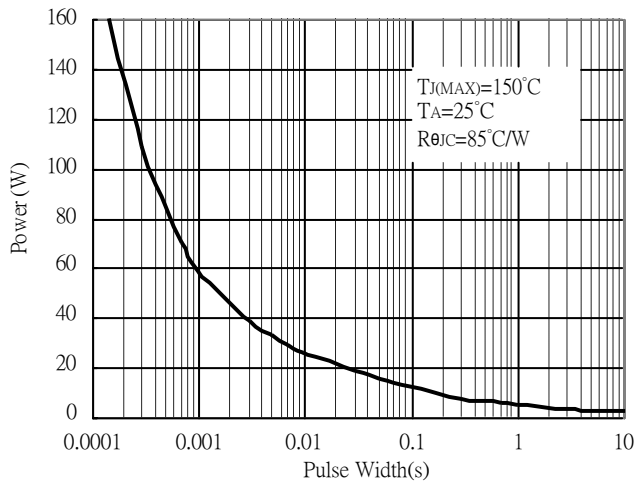


Typical Characteristics(Cont.)

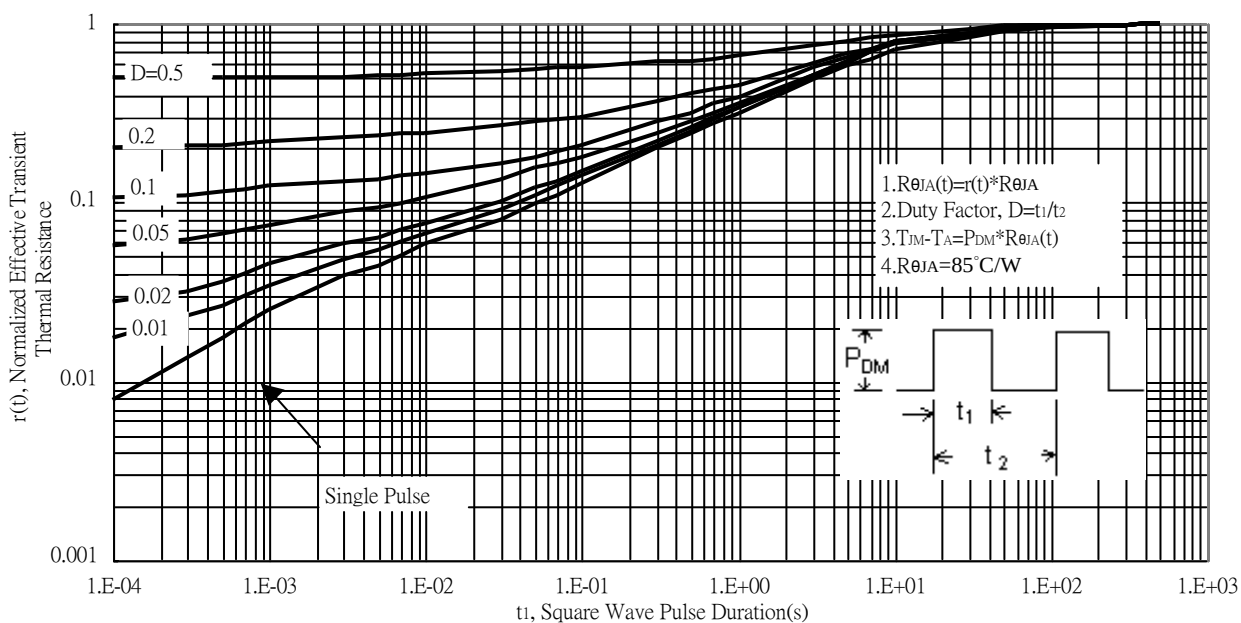
Typical Transfer Characteristics



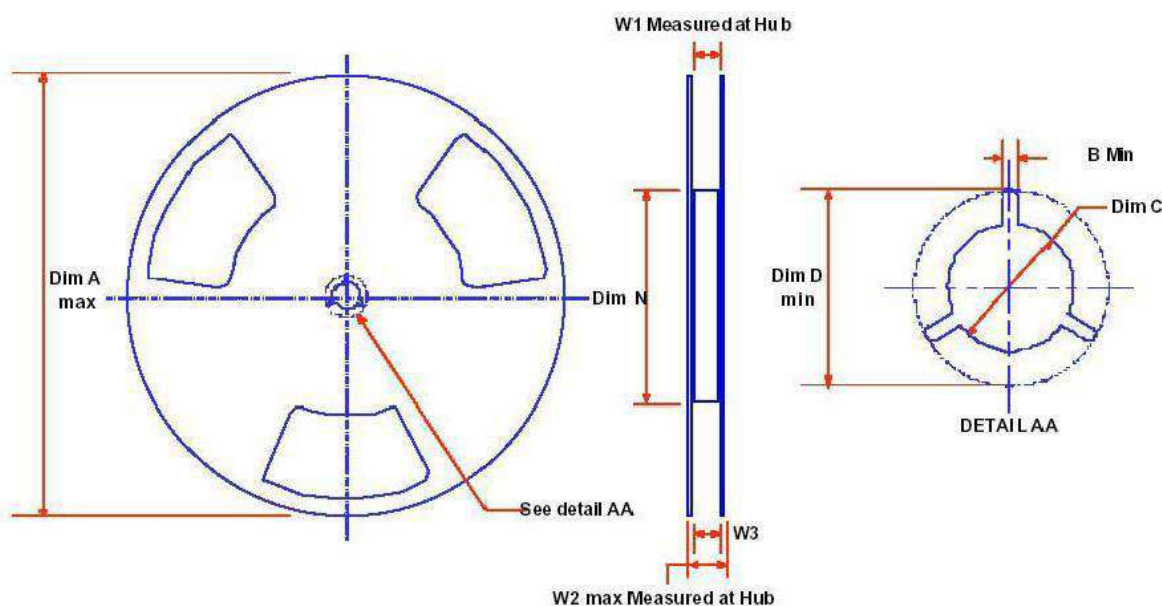
Single Pulse Maximum Power Dissipation



Transient Thermal Response Curves



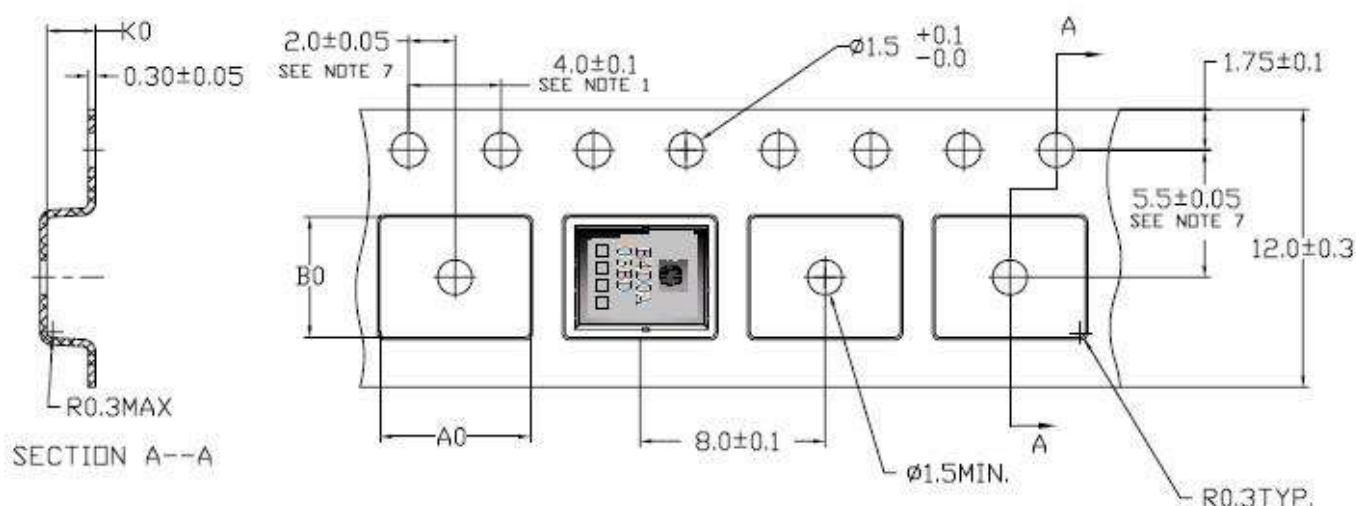
Reel Dimension



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/L99Z)	13.00 330+/-1	0.059 1.5 Min.	0.512 13.0 Min.	0.795 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

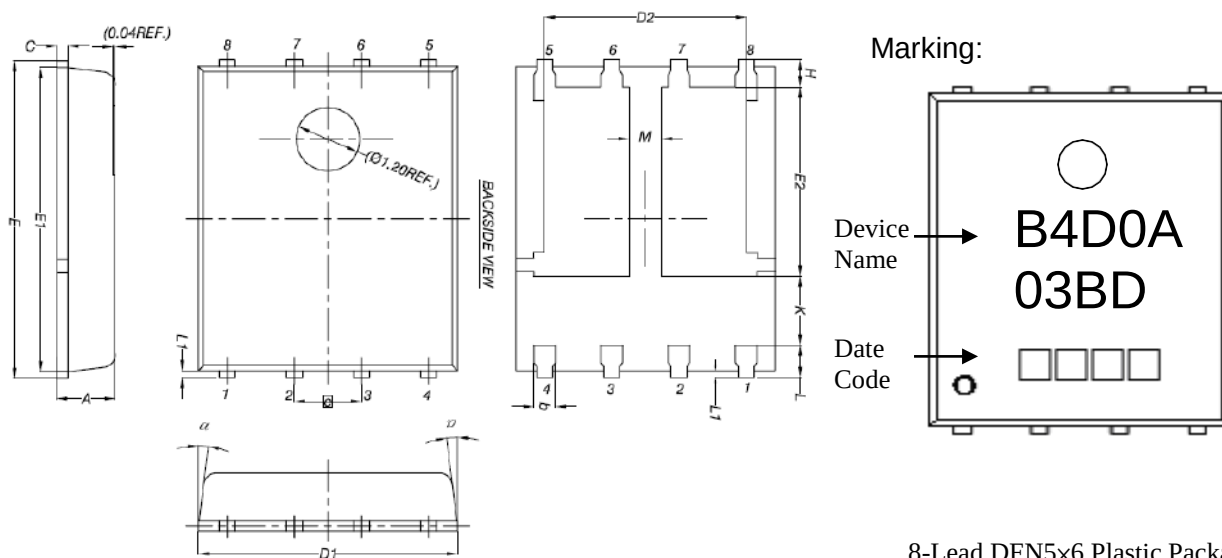


NOTE:

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.

A0=6.5±0.1
B0=5.3±0.1
K0=1.4±0.1

DFN5x6 Dimension



8-Lead DFN5x6 Plastic Package

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043	e	1.270	BSC	0.050	BSC
b	0.330	0.510	0.013	0.020	H	0.410	0.610	H	0.410
C	0.200	0.300	0.008	0.012	K	1.100	-	K	1.100
D1	4.800	5.000	0.189	0.197	L	0.510	0.710	L	0.510
D2	3.610	3.960	0.142	0.156	L1	0.060	0.200	L1	0.060
E	5.900	6.100	0.232	0.240	M	0.500	-	M	0.500
E1	5.700	5.800	0.224	0.228	α	0°	12°	α	0°
E2	3.380	3.780	0.133	0.149					