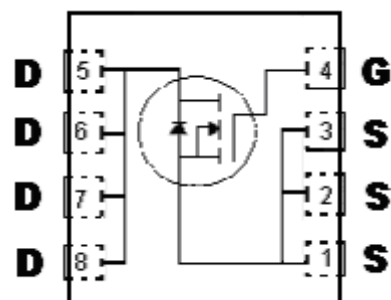
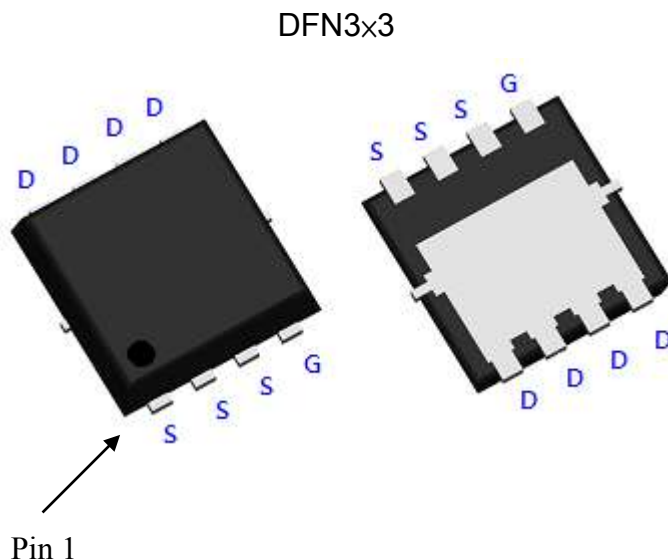


N-Channel Logic Level Enhancement Mode Power MOSFET

Features:

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

BV_{DSS}		30V
$I_D @ V_{GS}=10V, T_A=25^\circ C$		15A
$I_D @ V_{GS}=10V, T_C=25^\circ C$		58A
$R_{DS(on)(TYP)}$	$V_{GS}=10V, I_D=18A$	$4.3m\Omega$
	$V_{GS}=4.5V, I_D=10A$	$5.7m\Omega$



G : Gate D : Drain S : Source

Ordering Information

Device	Package	Shipping
KSPRB4D0N03B	DFN3x3 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Absolute Maximum Ratings (Ta=25°C, unless otherwise specified)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V _{DS}	30	V
Gate-Source Voltage		V _{GS}	±20	
Continuous Drain Current @ V _{GS} =10V, T _C =25°C		I _D	58	A
Continuous Drain Current @ V _{GS} =10V, T _C =100°C			36.7	
Continuous Drain Current @ V _{GS} =10V, T _A =25°C			15	
Continuous Drain Current @ V _{GS} =10V, T _A =70°C			12	
Pulsed Drain Current		I _{DM}	140 *1	
Avalanche Energy @ L=0.1mH, I _D =37A, R _G =25Ω		E _{AS}	68 *3	mJ
Repetitive Avalanche Energy @ L=0.05mH		E _{AR}	4.9	
Total Power Dissipation	T _C =25°C	P _D	41.7	W
	T _C =100°C		16.7	
	T _A =25°C	P _{DSM}	2.5 *2	
	T _A =70°C		1.6 *2	
Operating Junction and Storage Temperature Range		T _j , T _{stg}	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{θJC}	3	°C/W
Thermal Resistance, Junction-to-ambient, max	R _{θJA}	50 *2	

Note : 1. Pulse width limited by maximum junction temperature.

2. Surface mounted on a 1 in² pad of 2oz copper. In practice R_{th,j-a} will be determined by customer's PCB characteristics.
125°C/W when mounted on a minimum pad of 2 oz. copper.

3. 100% tested by conditions of L=0.5mH, I_{AS}=15A, V_{GS}=10V, V_{DD}=15V, rated 30V

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	30	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	1	-	2.5		V _{DS} = V _{GS} , I _D =250μA
G _{FS} *1	-	25	-	S	V _{DS} =5V, I _D =15A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V
I _{DSS}	-	-	1	μA	V _{DS} =24V, V _{GS} =0V
	-	-	10		V _{DS} =24V, V _{GS} =0V, T _j =85°C
R _{DS(ON)} *1	-	4.3	5.4	mΩ	V _{GS} =10V, I _D =18A
	-	5.7	7.4		V _{GS} =4.5V, I _D =10A
Dynamic					
C _{iss}	-	1442	-	pF	V _{DS} =15V, V _{GS} =0V, f=1MHz
C _{oss}	-	270	-		
C _{rss}	-	182	-		
Q _g *1, 2	-	31.5	-	nC	V _{DS} =15V, V _{GS} =10V, I _D =15A
Q _{gs} *1, 2	-	3.6	-		
Q _{gd} *1, 2	-	8.7	-		

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

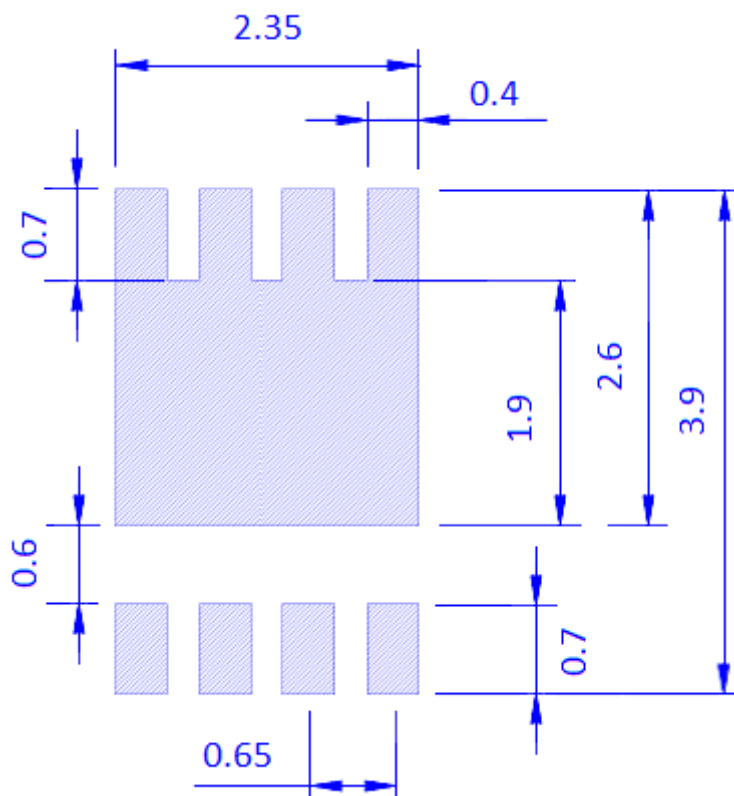
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
t _{d(ON)} *1, 2	-	13	-	ns	V _{DS} =15V, I _D =15A, V _{GS} =10V, R _{GS} =3Ω
t _r *1, 2	-	18	-		
t _{d(OFF)} *1, 2	-	43.8	-		
t _f *1, 2	-	10.6	-		
R _g	-	2.2	-	Ω	f=1MHz
Source-Drain Diode					
I _S *1	-	-	15	A	
I _{SM} *3	-	-	60		
V _{SD} *1	-	0.83	1.2	V	I _S =18A, V _{GS} =0V
t _{rr}	-	12	-	ns	I _F =15A, dI _F /dt=100A/μs
Q _{rr}	-	4	-	nC	

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

*2.Independent of operating temperature

*3.Pulse width limited by maximum junction temperature.

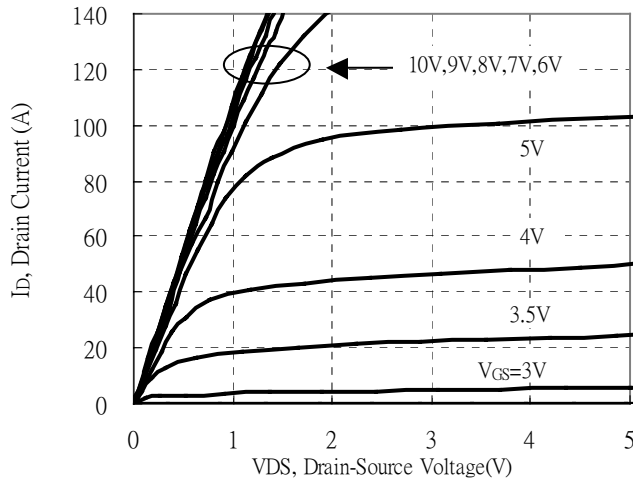
Recommended Soldering Footprint



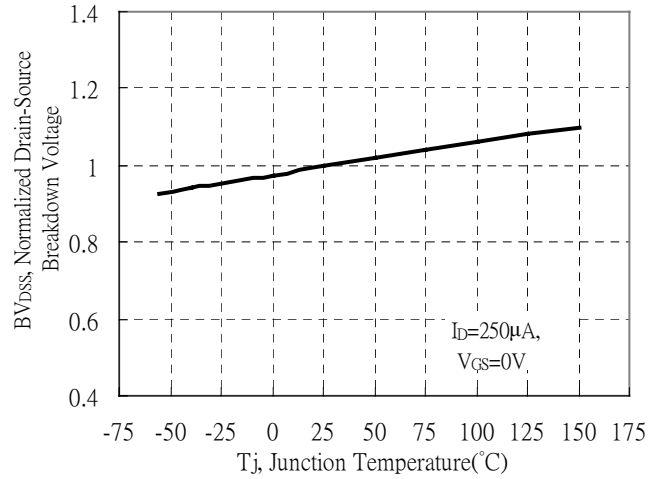
unit : mm

Typical Characteristics

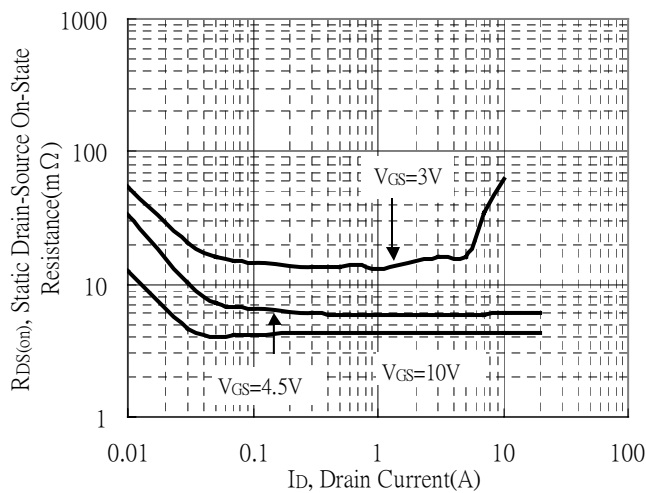
Typical Output Characteristics



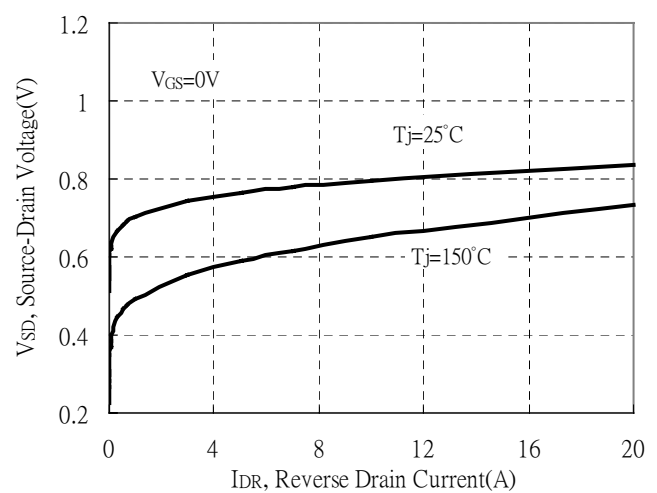
Breakdown Voltage vs Junction Temperature



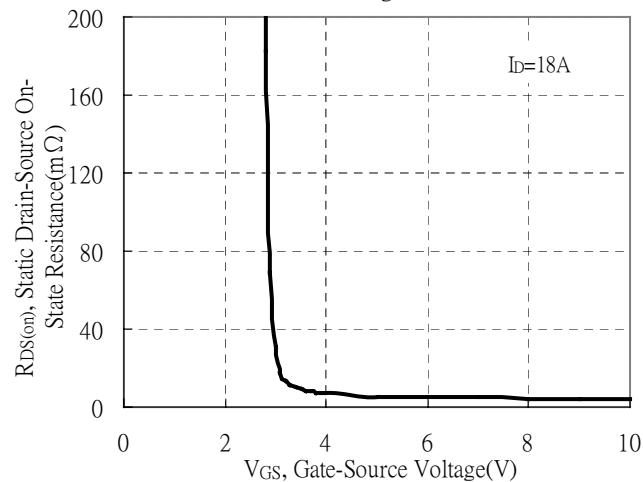
Static Drain-Source On-State resistance vs Drain Current



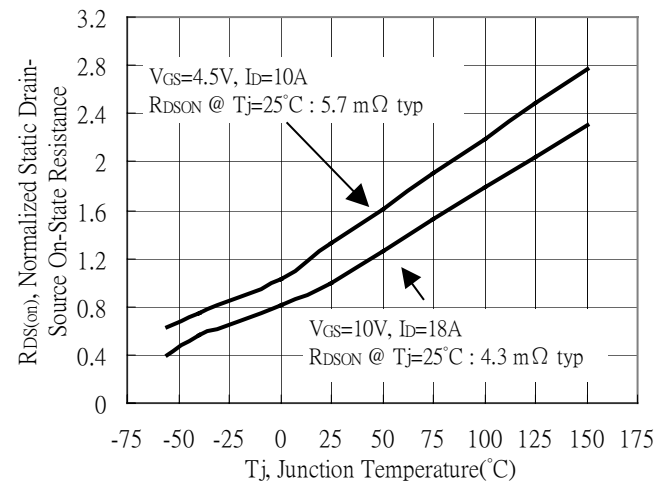
Reverse Drain Current vs Source-Drain Voltage



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

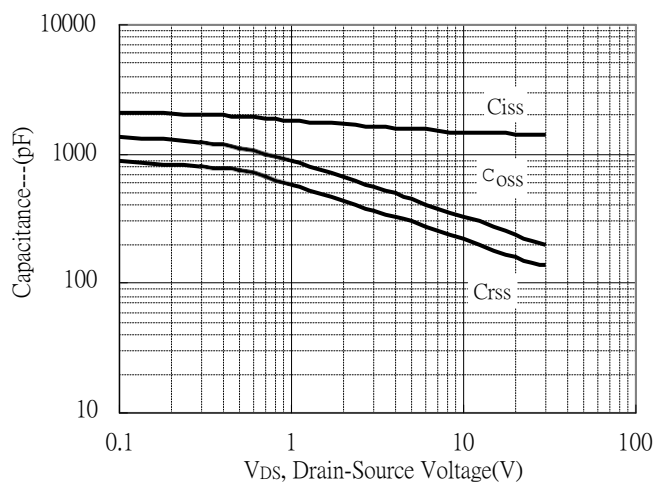


Drain-Source On-State Resistance vs Junction Temperature

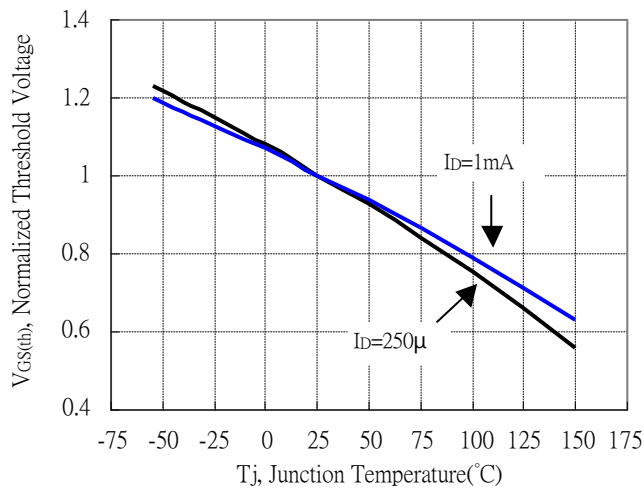


Typical Characteristics(Cont.)

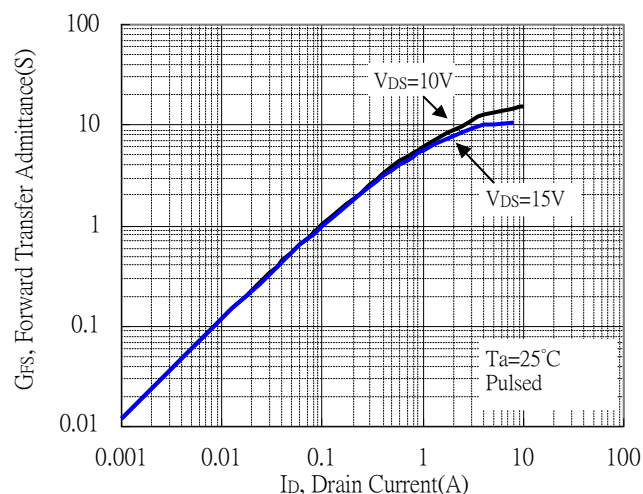
Capacitance vs Drain-to-Source Voltage



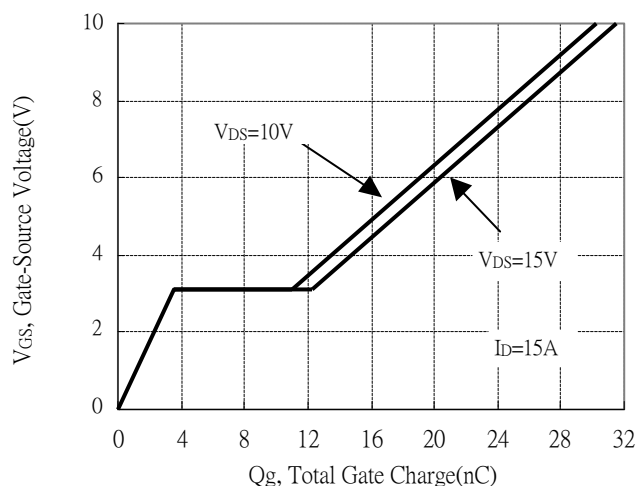
Threshold Voltage vs Junction Temperature



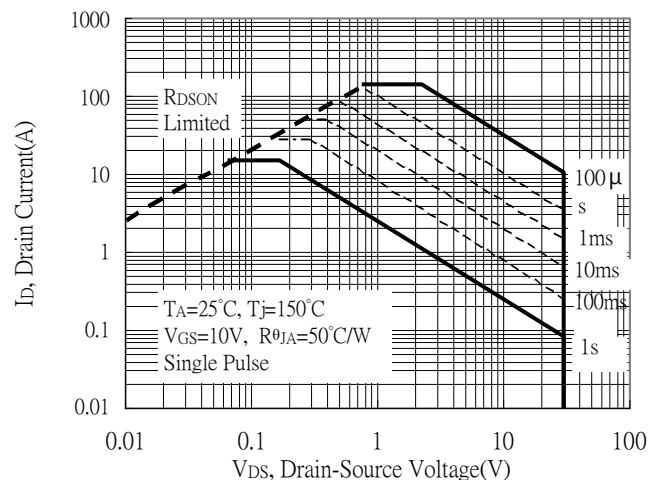
Forward Transfer Admittance vs Drain Current



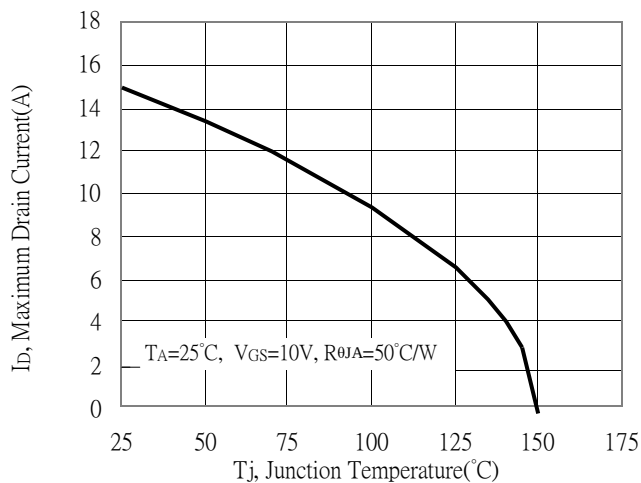
Gate Charge Characteristics



Maximum Safe Operating Area

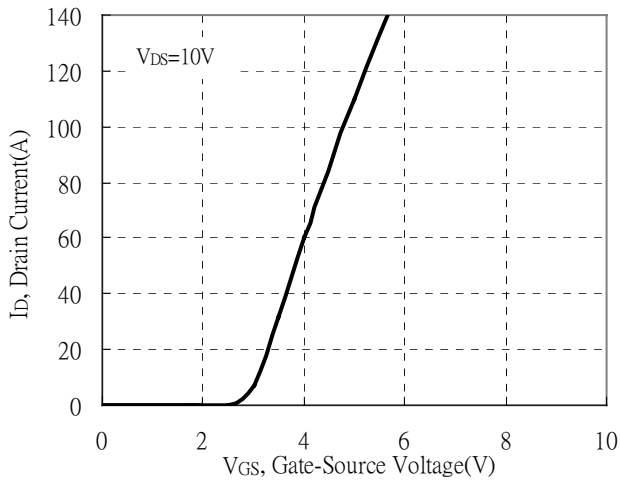


Maximum Drain Current vs Junction Temperature

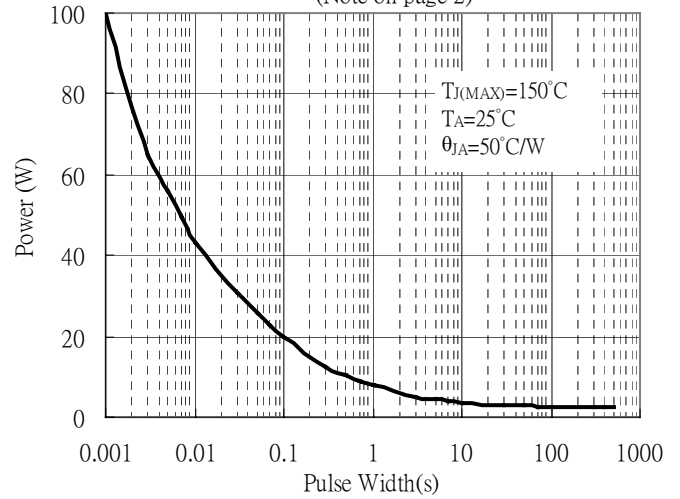


Typical Characteristics(Cont.)

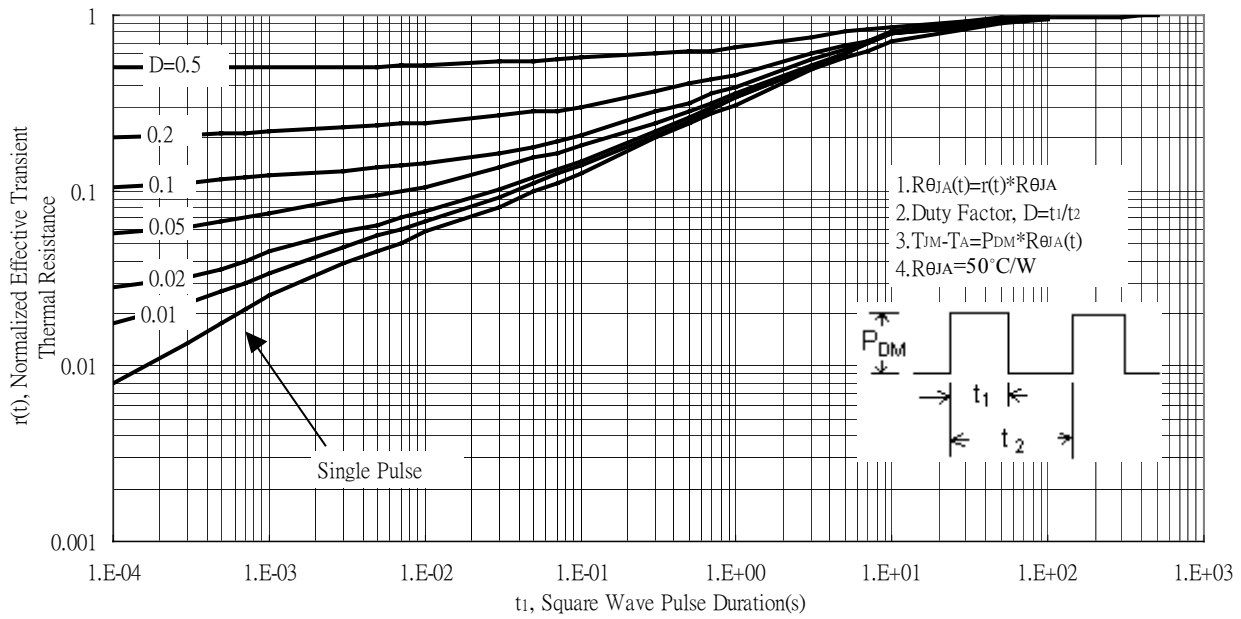
Typical Transfer Characteristics



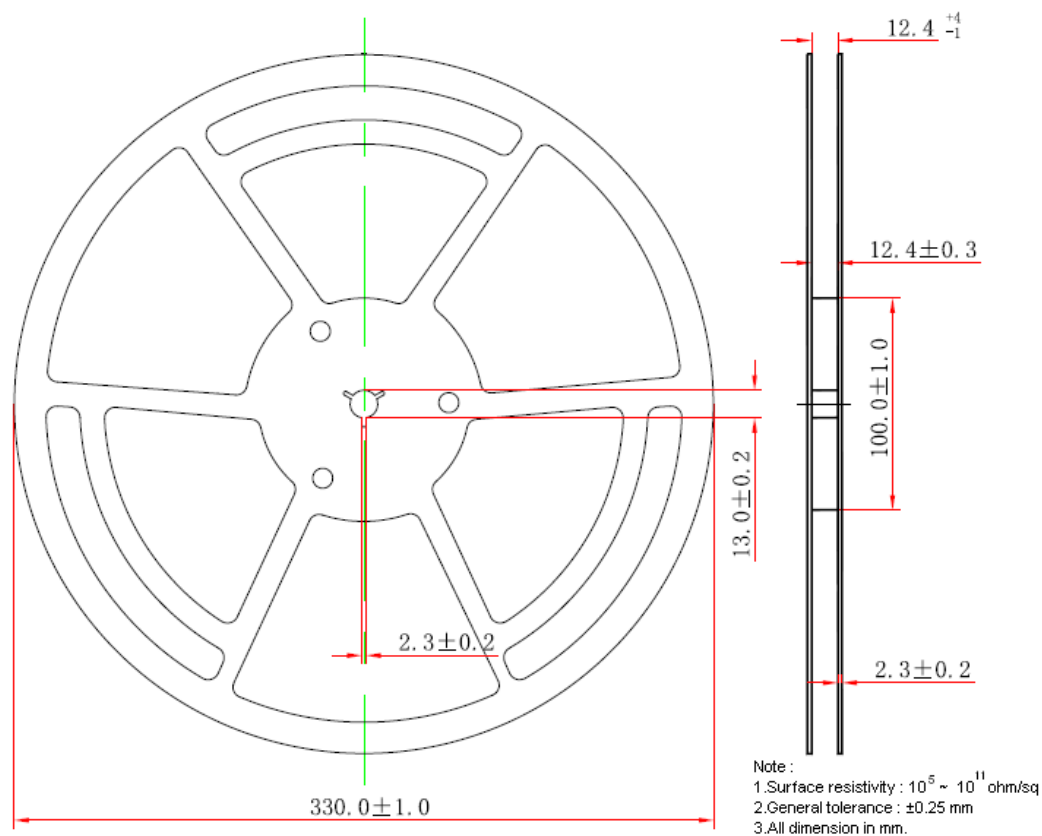
Single Pulse Power Rating, Junction to Ambient
 (Note on page 2)



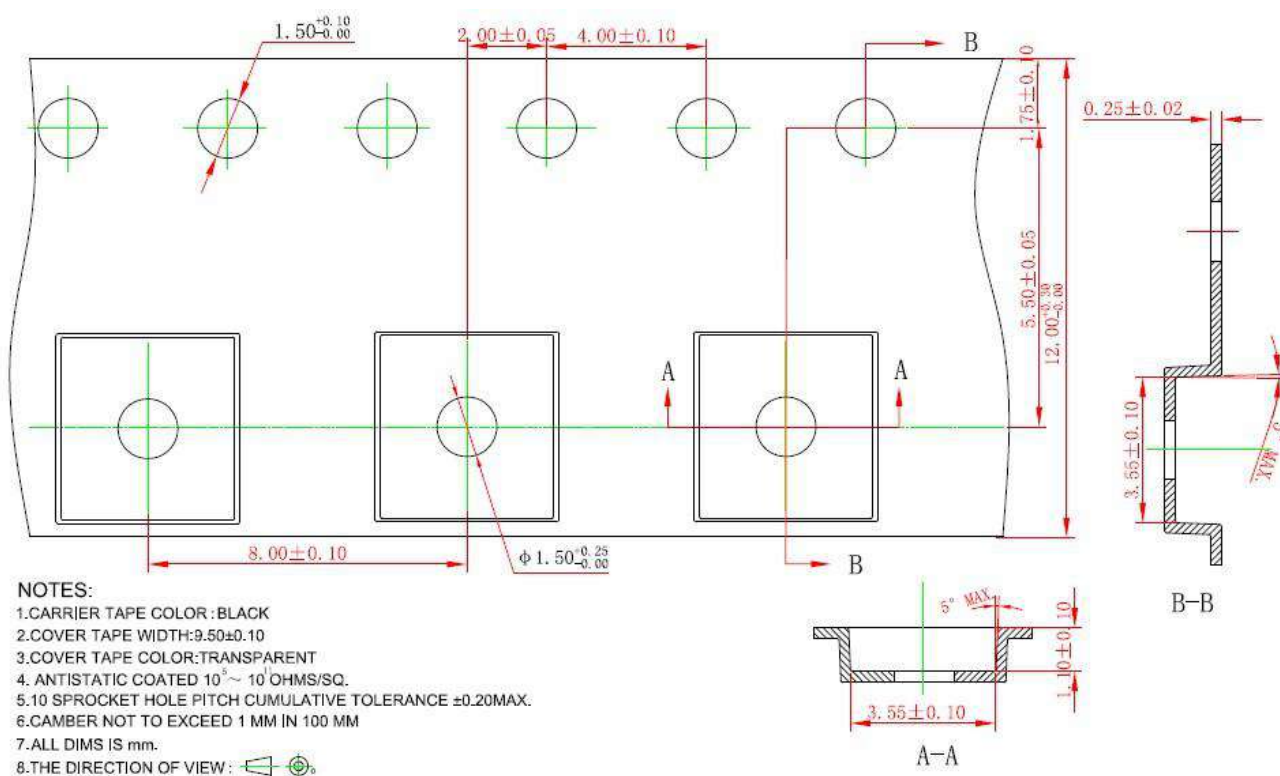
Transient Thermal Response Curves



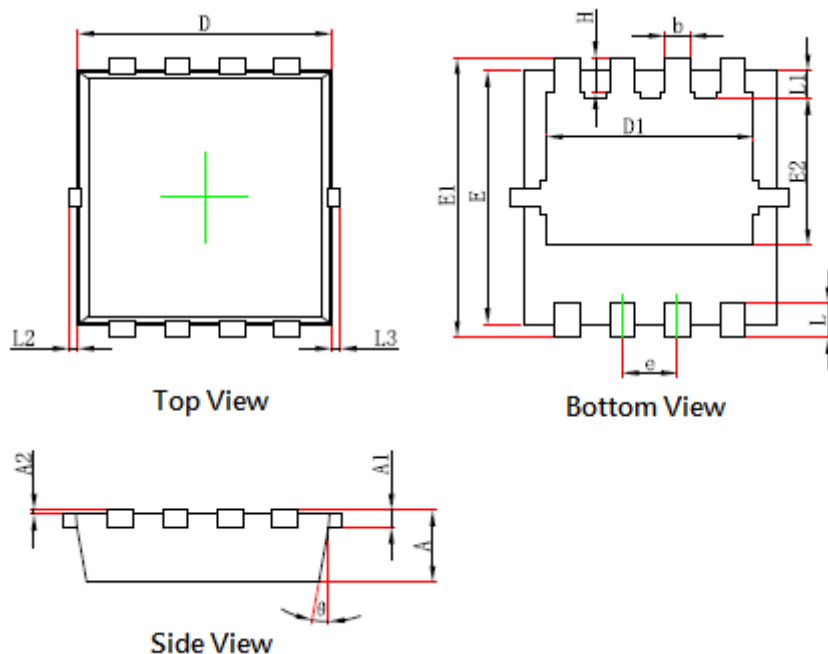
Reel Dimension



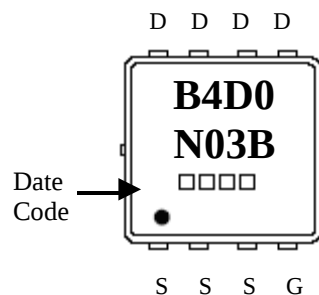
Carrier Tape Dimension



DFN3x3 Dimension



Marking:



8-Lead DFN3x3 Plastic Package

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.026	0.033	0.650	0.850	b	0.008	0.016	0.200	0.400
A1	0.006	REF	0.152	REF	e	0.022	0.030	0.550	0.750
A2	0.000	0.002	0.000	0.050	L	0.012	0.020	0.300	0.500
D	0.114	0.122	2.900	3.100	L1	0.007	0.019	0.180	0.480
D1	0.091	0.102	2.300	2.600	L2	0.000	0.004	0.000	0.100
E	0.114	0.122	2.900	3.100	L3	0.000	0.004	0.000	0.100
E1	0.124	0.136	3.150	3.450	H	0.012	0.020	0.315	0.515
E2	0.060	0.076	1.535	1.935	θ	9°	13°	9°	13°