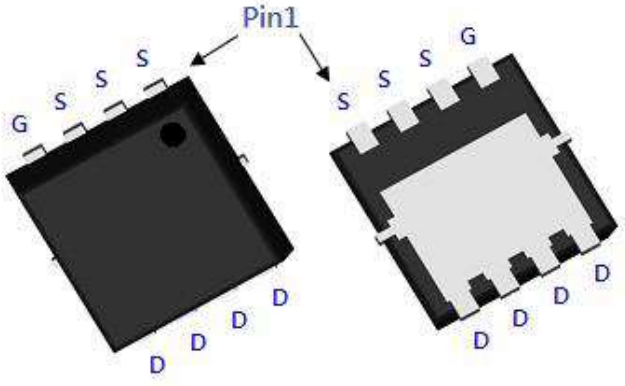
N-Channel Enhancement Mode Power MOSFET

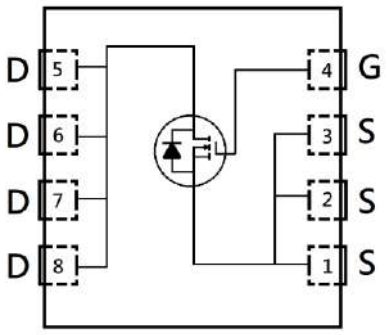
Features:

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

DFN3x3



BV_{DSS}		30V
I_D @ T_C=25°C, V_{GS}=10V		44A
I_D @ T_A=25°C, V_{GS}=10V		13A
$R_{DSON(TYP)}$	V_{GS}=10V, I_D=12A	7.0mΩ
	V_{GS}=4.5V, I_D=9A	9.5mΩ



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KSPRB7D8N03AR	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 (Silicon Limit)		I_D	44	A
Continuous Drain Current @ V_{GS}=10V, T_C=100°C (Silicon Limit)			27.8	
Continuous Drain Current @ V_{GS}=10V, T_C=25°C (Package Limit)			20	
Continuous Drain Current @ V_{GS}=10V, T_A=25°C			13	
Continuous Drain Current @ V_{GS}=10V, T_A=70°C			10.5	
Pulsed Drain Current		I_{DM}	52 *1	
Avalanche Current @ L=0.1mH		I_{AS}	13	
Avalanche Energy @ L=0.5mH		E_{AS}	12	mJ
Total Power Dissipation	TC=25°C	P_D	36	W
	TA=25°C		3.1 *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	$R_{\theta JC}$	3.5	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{\theta JA}$	40 *2	

Note : 1. Pulse width limited by maximum junction temperature.
2. Surface mounted on a 1 in² pad of 2oz copper, t≤10s. 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.

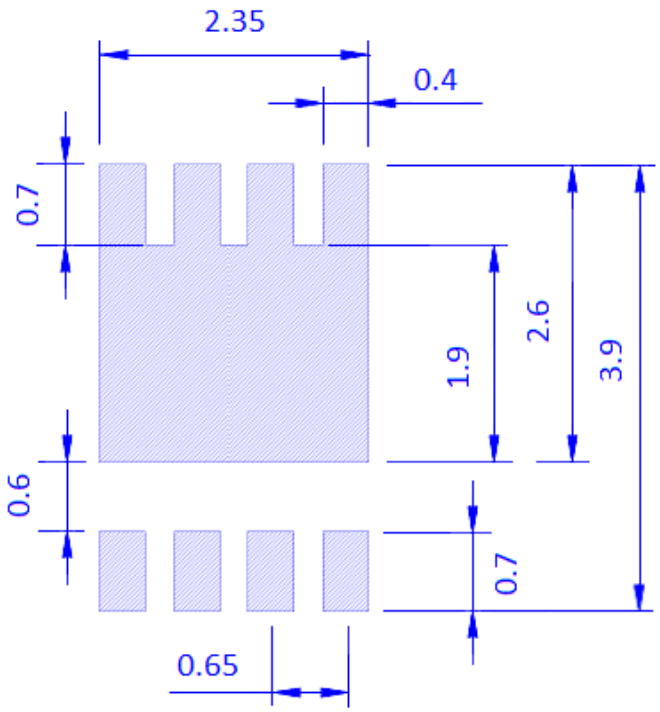
Characteristics (T_C=25°C, unless otherwise specified)

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	-	13.8	-	S	V_{DS} =5V, I_D=11A
I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0V
I_{DSS}	-	-	1	μA	V_{DS} =24V, V_{GS} =0V
	-	-	5		V_{DS} =24V, V_{GS} =0V, Tj=55°C
$R_{DS(ON)}$ *1	-	7	9.1	mΩ	V_{GS} =10V, I_D=12A
	-	9.5	14.5		V_{GS} =4.5V, I_D=9A
Dynamic					
Ciss	-	559	-	pF	V_{DS}=15V, V_{GS}=0V, f=1MHz
Coss	-	405	-		
Crss	-	54	-		

Qg *1, 2	-	10.7	-	nC	V_{DS}=15V, V_{GS}=10V, I_D=19A
Qgs *1, 2	-	2.1	-		
Qgd *1, 2	-	2.2	-		
$t_{d(ON)}$ *1, 2	-	6.8	-	ns	V_{DS}=15V, I_D=10A, V_{GS}=10V, R_{GS}=1Ω
tr *1, 2	-	13.2	-		
$t_{d(OFF)}$ *1, 2	-	20	-		
t_f *1, 2	-	5.4	-		
$t_{d(ON)}$ *1, 2	-	10.4	-	ns	V_{DS}=15V, I_D=10A, V_{GS}=4.5V, R_{GS}=1Ω
tr *1, 2	-	16.2	-		
$t_{d(OFF)}$ *1, 2	-	15.2	-		
t_f *1, 2	-	10.2	-		
Rg	-	0.6	-	Ω	f=1MHz
Source-Drain Diode					
I_S *1	-	-	13	A	
I_{SM} *3	-	-	52		
V_{SD} *1	-	0.86	1.2	V	I_S=10A, V_{GS}=0V
trr	-	14.8	-	ns	I_F=10A, dI_F/dt=100A/μs
Qrr	-	3.9	-	nC	

Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
*2.Independent of operating temperature
*3.Pulse width limited by maximum junction temperature.

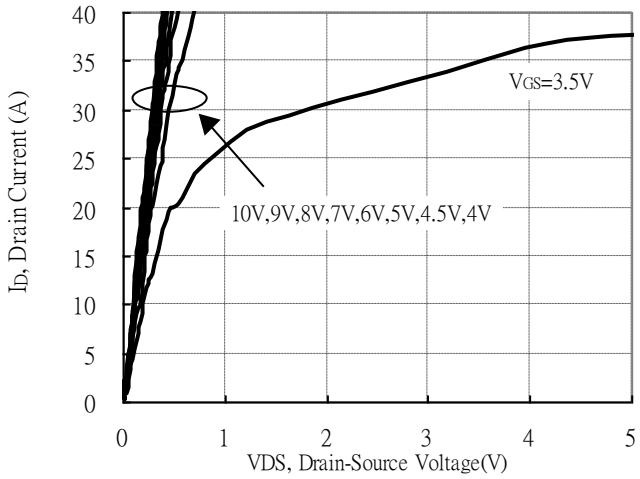
Recommended Soldering Footprint



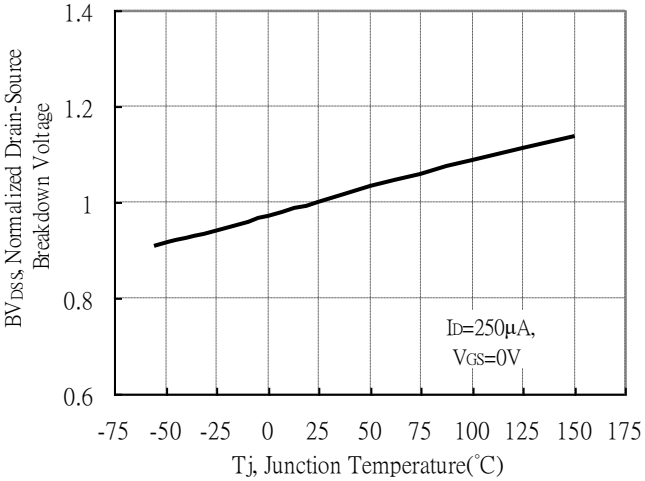
unit : mm

Typical Characteristics

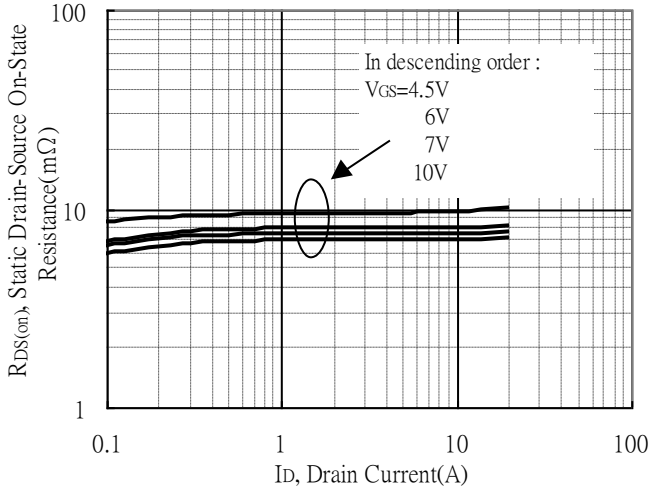
Typical Output Characteristics



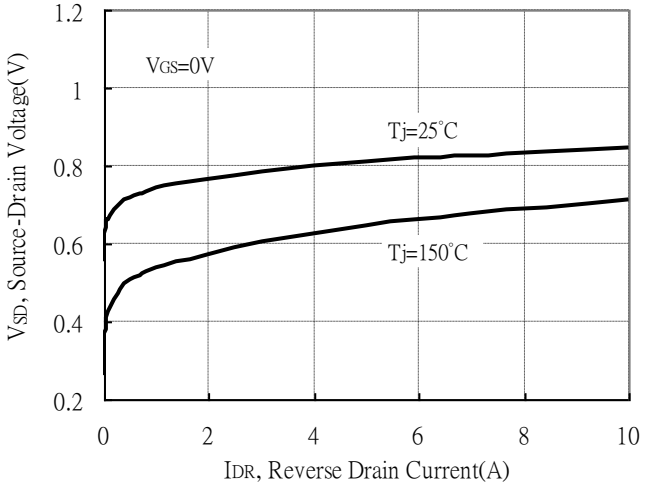
Brekdown Voltage vs Ambient Temperature



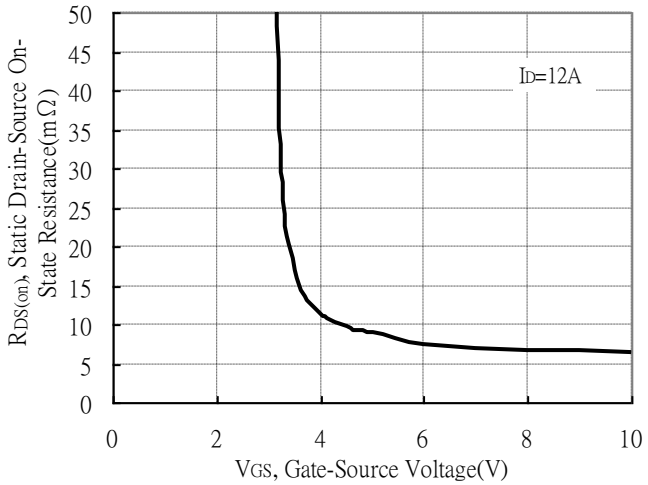
Static Drain-Source On-State resistance vs Drain Current



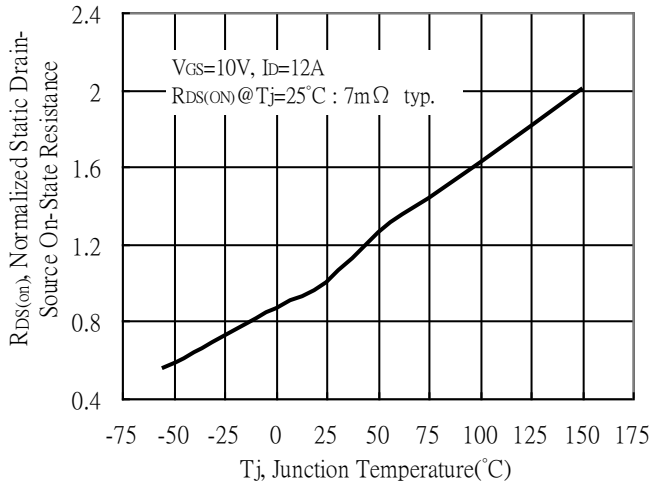
Reverse Drain Current vs Source-Drain Voltage



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

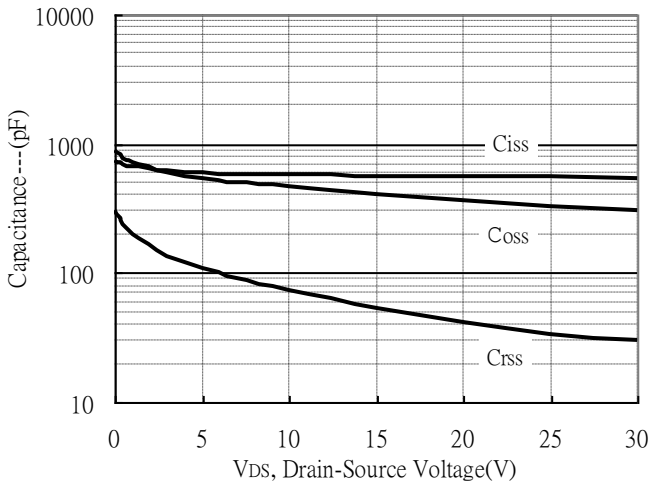


Drain-Source On-State Resistance vs Junction Tempearture

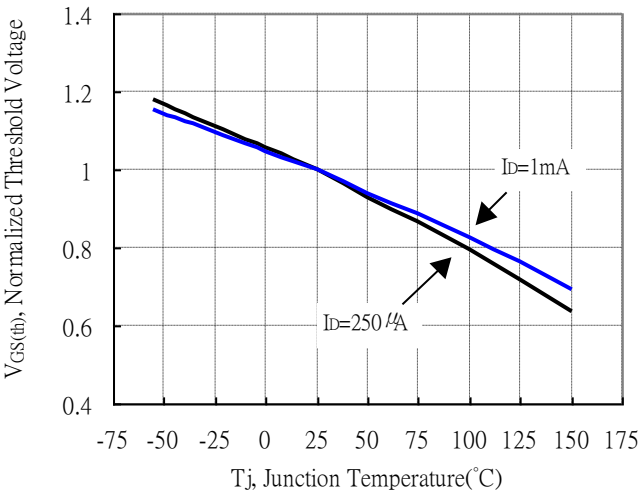


Typical Characteristics(Cont.)

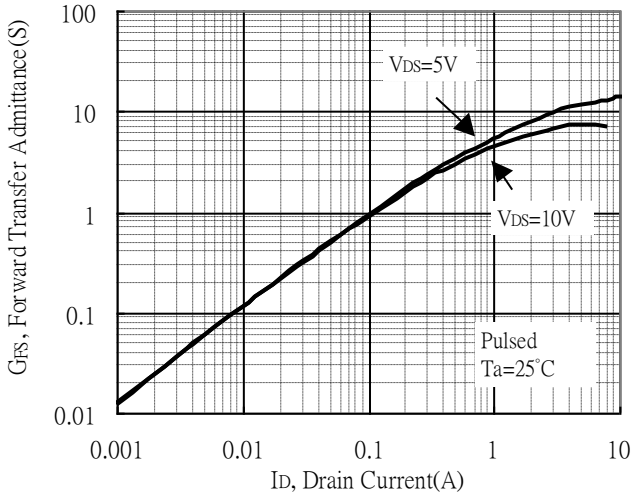
Capacitance vs Drain-to-Source Voltage



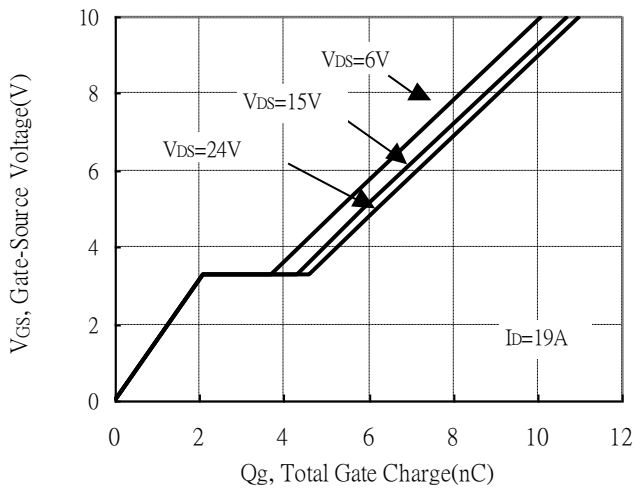
Threshold Voltage vs Junction Tempearture



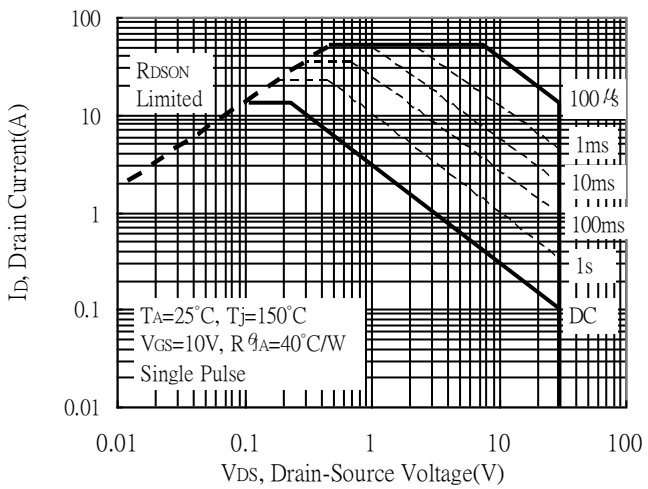
Forward Transfer Admittance vs Drain Current



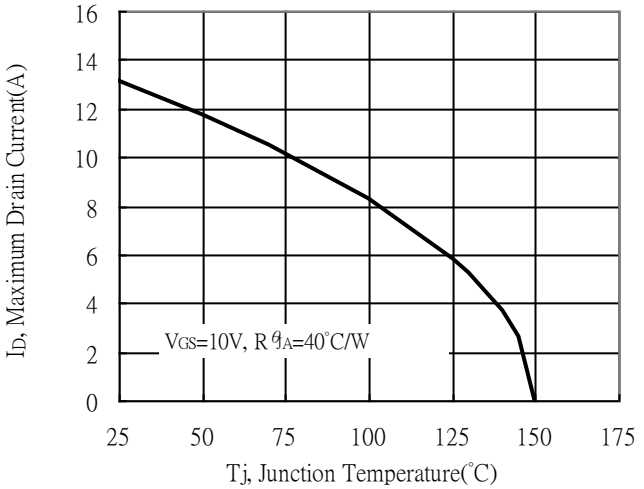
Gate Charge Characteristics



Maximum Safe Operating Area

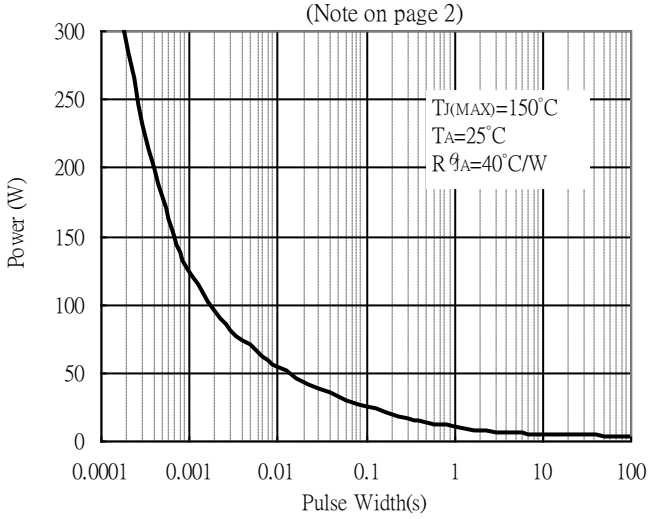


Maximum Drain Current vs Junction Temperature

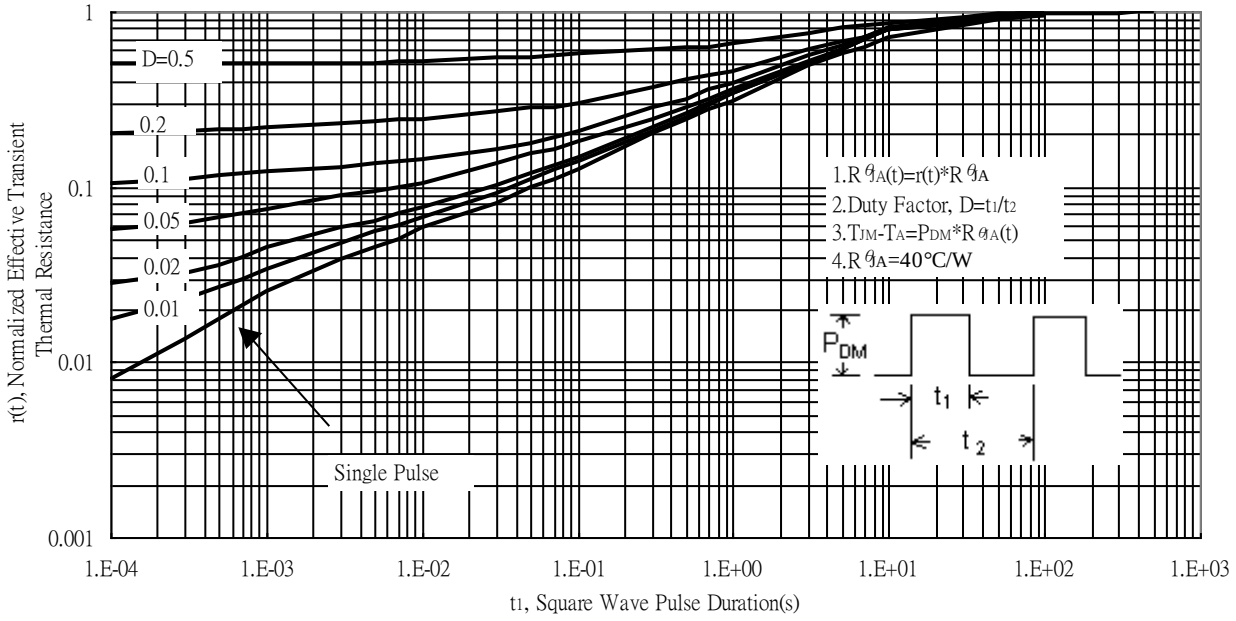


Typical Characteristics(Cont.)

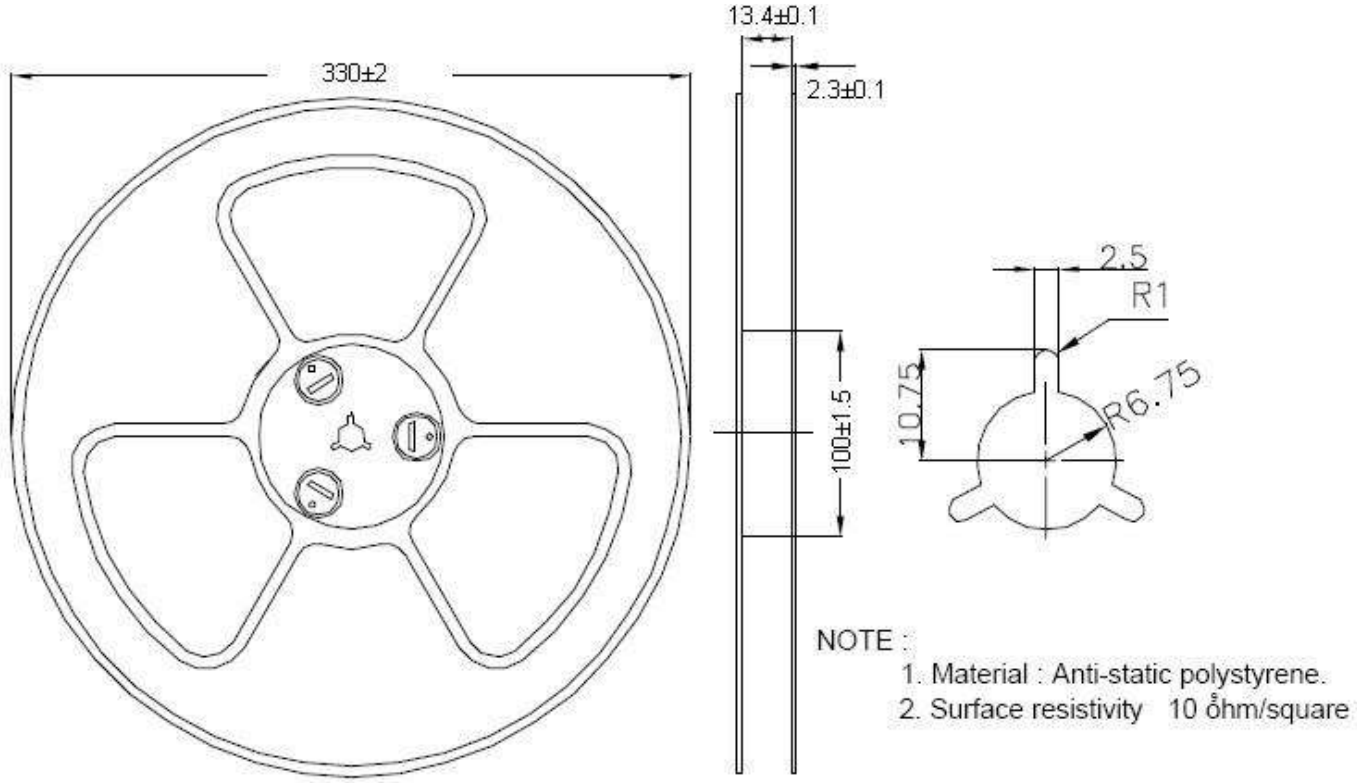
Single Pulse Power Rating, Junction to Ambient
(Note on page 2)



Transient Thermal Response Curves

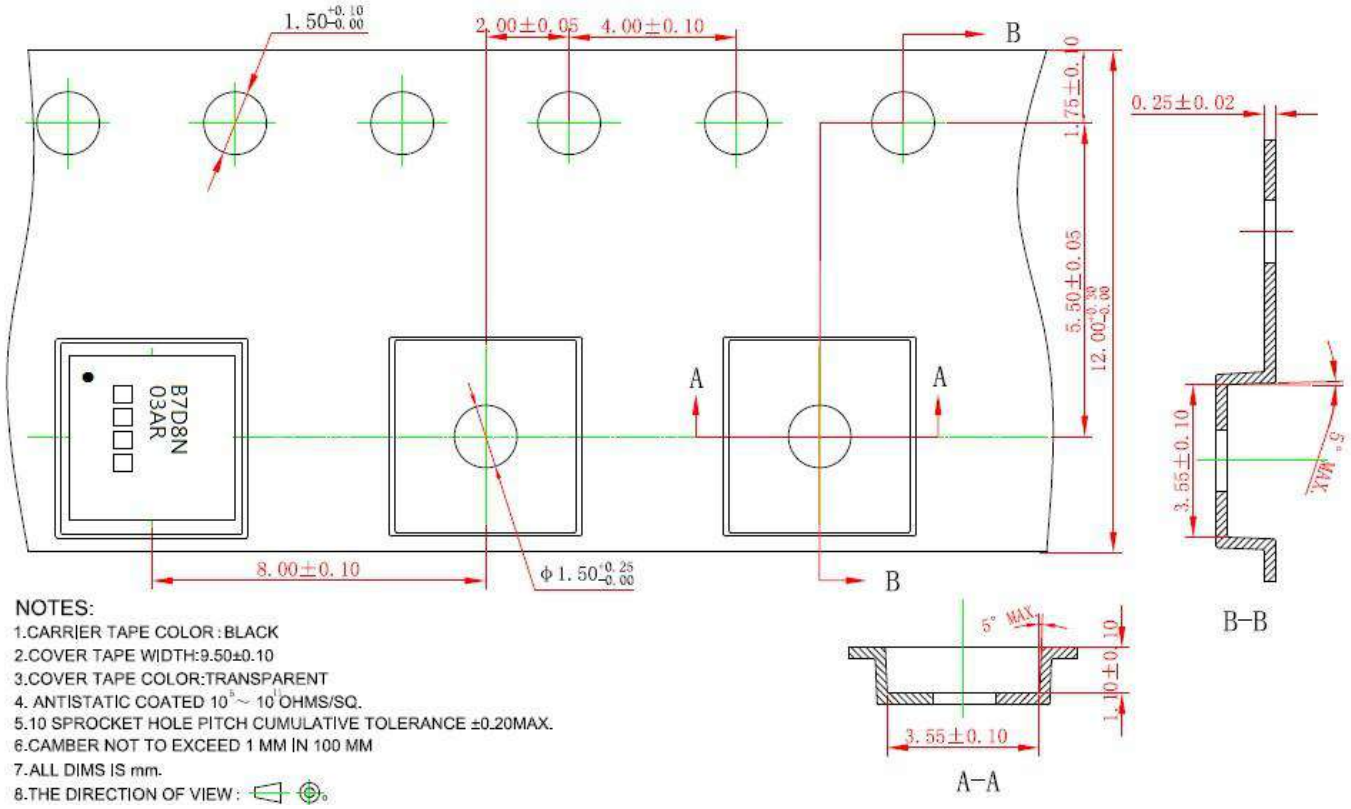


Reel Dimension



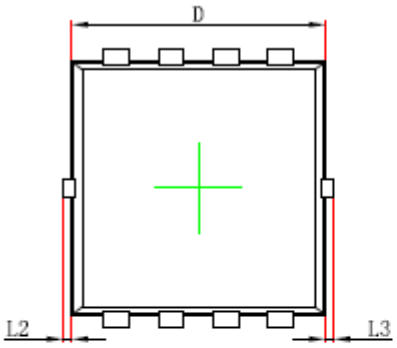
NOTE :
1. Material : Anti-static polystyrene.
2. Surface resistivity 10 ôhm/square

Carrier Tape Dimension

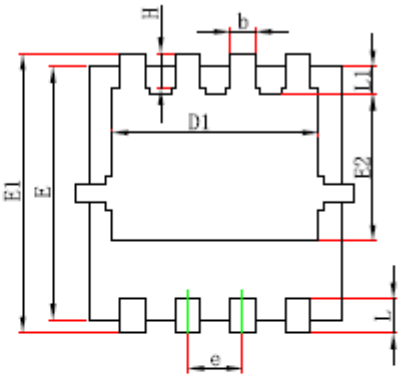


NOTES:
1.CARRIER TAPE COLOR : BLACK
2.COVER TAPE WIDTH:9.50±0.10
3.COVER TAPE COLOR:TRANSPARENT
4. ANTISTATIC COATED 10^{5}~ 10^{11} OHMS/SQ.
5.10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ±0.20MAX.
6.CAMBER NOT TO EXCEED 1 MM IN 100 MM
7.ALL DIMS IS mm.
8.THE DIRECTION OF VIEW :

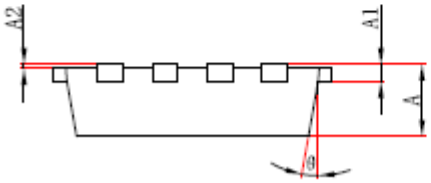
DFN3x3 Dimension



Top View

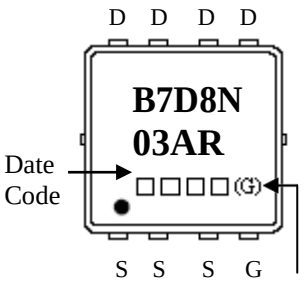


Bottom View



Side View

Marking:



Assembly site code :
blank →JCET
G→GEM

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	0.126	2.900	3.200	L1	0.007	0.019	0.180	0.480
D1	0.091	0.102	2.300	2.600	L2	0.000	0.006	0.000	0.150
E	0.114	0.126	2.900	3.200	L3	0.000	0.006	0.000	0.150
E1	0.124	0.136	3.150	3.450	H	0.012	0.020	0.300	0.515
E2	0.058	0.076	1.480	1.935	θ	8°	13°	8°	13°