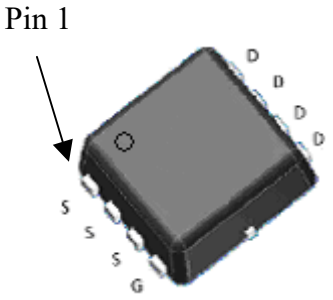
P-Channel Enhancement Mode Power MOSFET

Features:

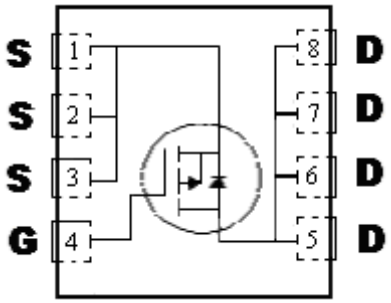
- Simple drive requirement
- Low on-resistance
- Fast switching speed
- Pb-free lead plating and halogen-free package

DFN3x3



Description :

The KSPRB032P06A is a P-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness.



G：Gate S：Source D：Drain

BV_{DSS}	-60V
I_D@V_{GS}=-10V, T_C=25°C	-25A
R_{DSON}@V_{GS}=10V, I_D=-6A	30mΩ (typ)
R_{DSON}@V_{GS}=-4.5V, I_D=-4A	35mΩ (typ)

Ordering Information

Device	Package	Shipping
KSPRB032P06A	DFN3x3 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±25	
Continuous Drain Current @ T_C=25°C, V_{GS}=-10V		I_D	-25	A
Continuous Drain Current @ T_C=100°C, V_{GS}=-10V			-16	
Continuous Drain Current @ T_A=25°C, V_{GS}=-10V			-6.6	
Continuous Drain Current @ T_A=70°C, V_{GS}=-10V			-5.3	
Pulsed Drain Current		I_{DM}	-40 *1	
Avalanche Current		I_{AS}	-10	
Avalanche Energy @ L=0.1mH, I_D=-10A, R_G=25Ω		E_{AS}	5	mJ
Repetitive Avalanche Energy @ L=0.05mH		E_{AR}	2.5 *2	
Total Power Dissipation	T_C=25℃	P_D	36	W
	T_C=100℃		14	
	T_A=25℃		2.5 *3	
	T_A=70℃		1.6 *3	
Operating Junction and Storage Temperature Range		Tj, Tstg	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	3.5	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	50 *3	

Note : 1. Pulse width limited by maximum junction temperature
2. Duty cycle≤1%
3. Surface mounted on 1 in² copper pad of FR-4 board, t≤10s ; 125°C/W when mounted on minimum copper pad.

Electrical Characteristics (Tj=25°C, unless otherwise specified)

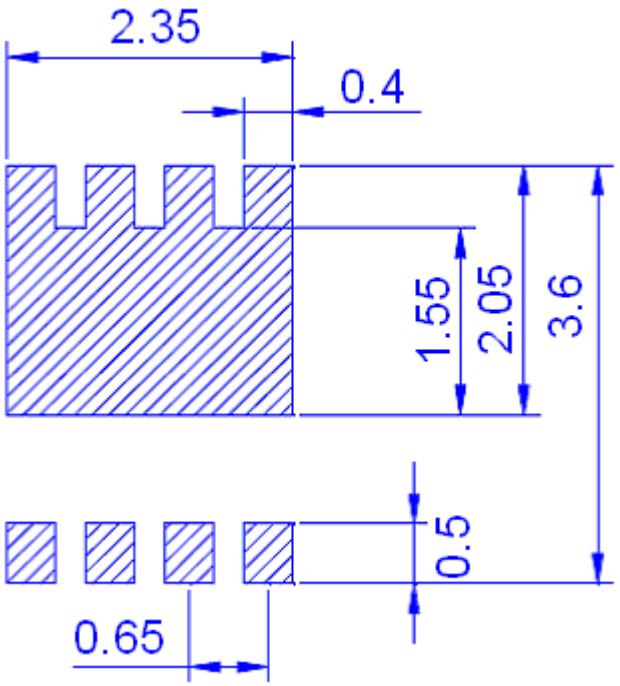
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-60	-	-	V	V_{GS}=0V, I_D=-250μA
$V_{GS(th)}$	-0.8	-	-2.5		V_{DS}=V_{GS}, I_D=-250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±25V, V_{DS}=0V
I_{DSS}	-	-	-1	μA	V_{DS}=-48V, V_{GS}=0V
	-	-	-25		V_{DS}=-48V, V_{GS}=0V, Tj=125°C
$R_{DS(ON)}$ *1	-	30	39	mΩ	V_{GS}=-10V, I_D=-6A
	-	35	46		V_{GS}=-4.5V I_D=-4A
G_{FS} *1	-	18	-	S	V_{DS}=-5V, I_D=-6A
Dynamic					
Ciss	-	2827	-	pF	V_{DS}=-30V, V_{GS}=0V, f=1MHz
Coss	-	109	-		
Crss	-	70	-		

Electrical Characteristics(Cont.) (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
$t_{d(ON)}$ *1, 2	-	18	-	ns	V_{DS}=-30V, I_D=-6A, V_{GS}=-10V, R_G=6Ω
tr *1, 2	-	12	-		
$t_{d(OFF)}$ *1, 2	-	99	-		
t_f *1, 2	-	35	-		
Qg *1, 2	-	32	-	nC	V_{DS}=-48V, I_D=-6A, V_{GS}=-10V
Qgs *1, 2	-	8	-		
Qgd *1, 2	-	10	-		
Source-Drain Diode					
V_{SD} *1	-	-0.74	-1	V	I_S=-3A, V_{GS}=0V
trr	-	75	-	ns	I_F=6A, dI_F/dt=100A/μs
Qrr	-	98	-	nC	

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

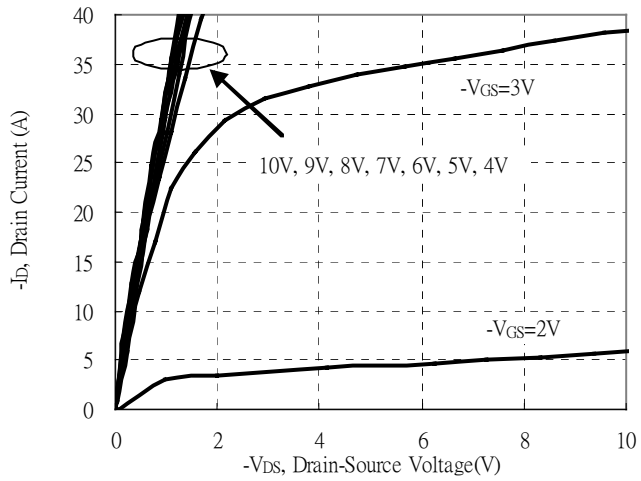
Recommended Soldering Footprint



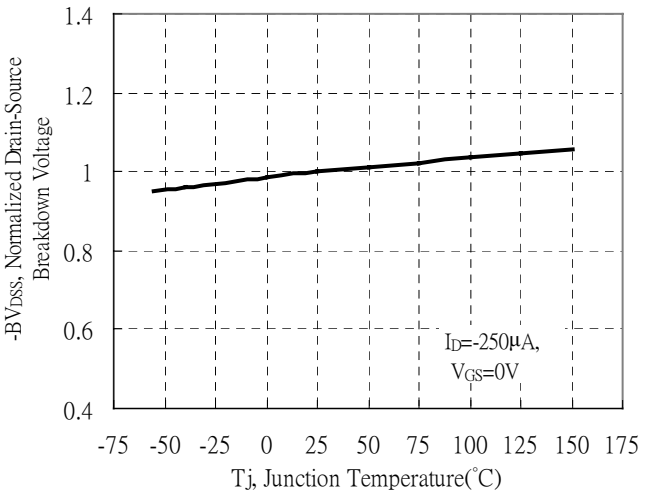
unit : mm

Typical Characteristics

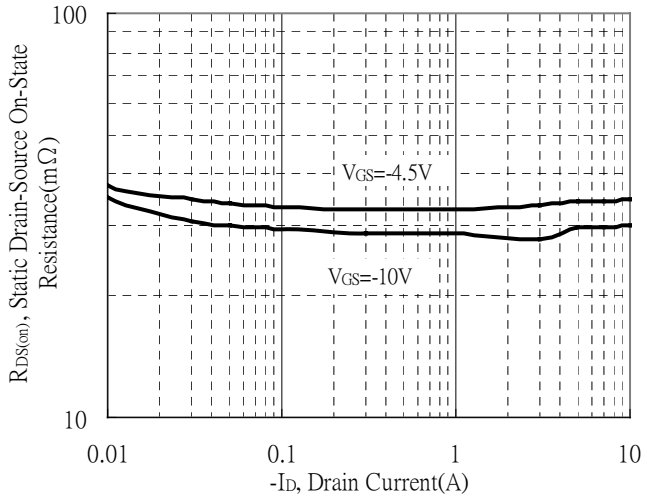
Typical Output Characteristics



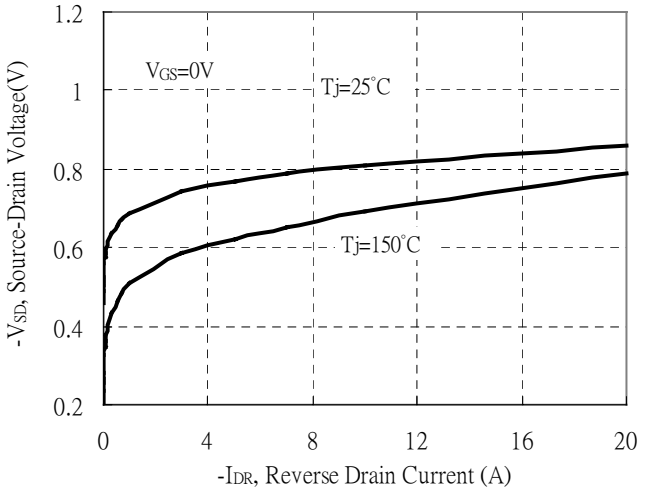
Brekdown Voltage vs Ambient Temperature



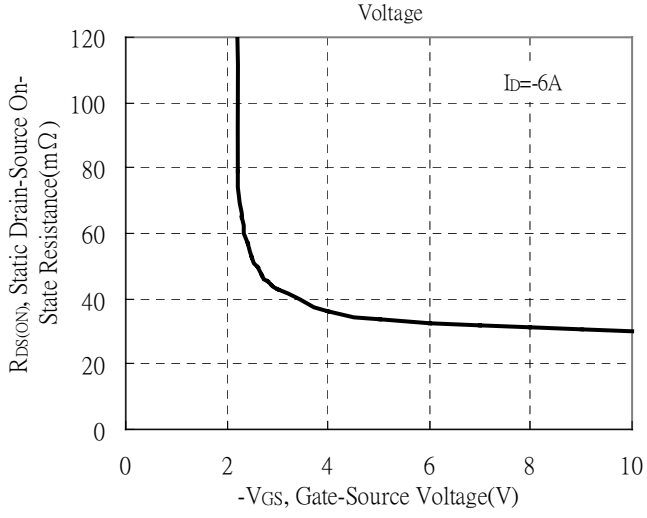
Static Drain-Source On-State resistance vs Drain Current



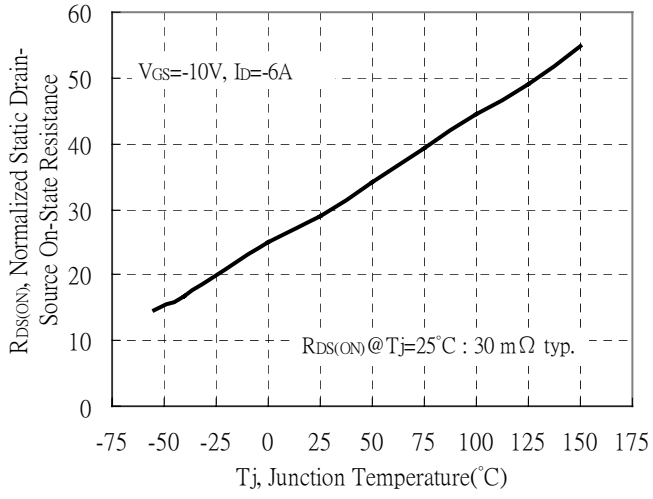
Reverse Drain Current vs Source-Drain Voltage



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

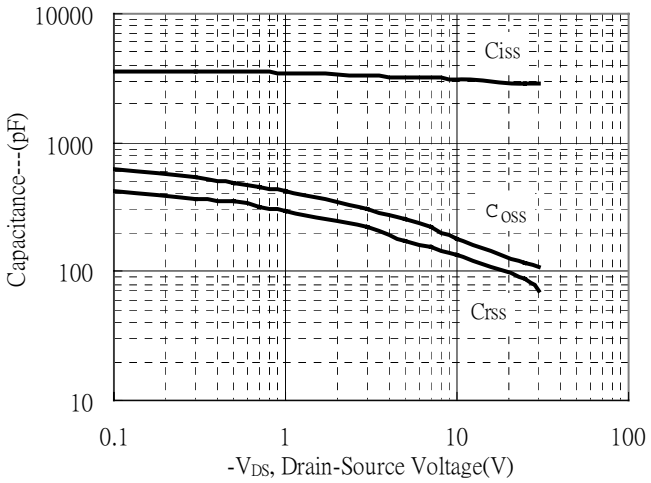


Drain-Source On-State Resistance vs Junction Tempearture

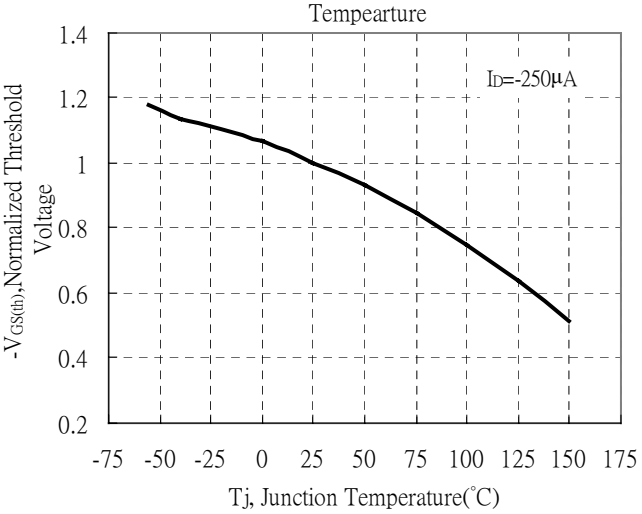


Typical Characteristics(Cont.)

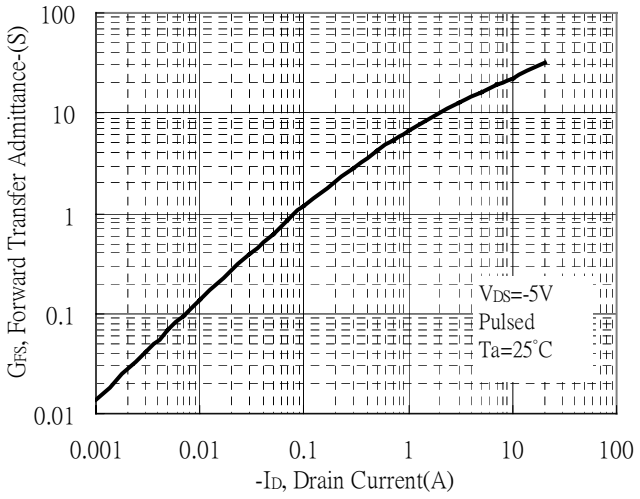
Capacitance vs Drain-to-Source Voltage



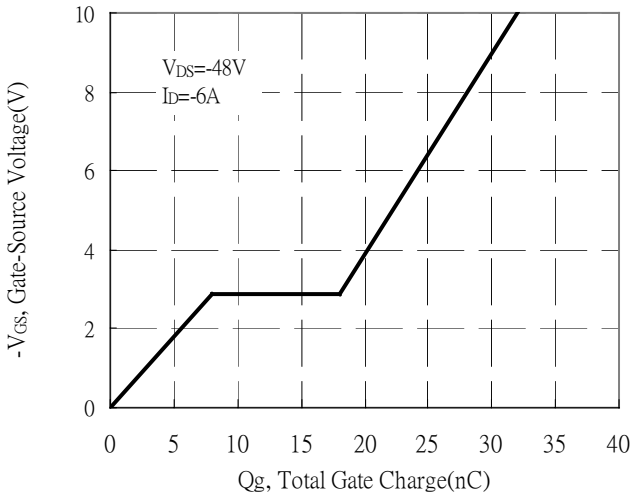
Normalized Threshold Voltage vs Junction Tempearture



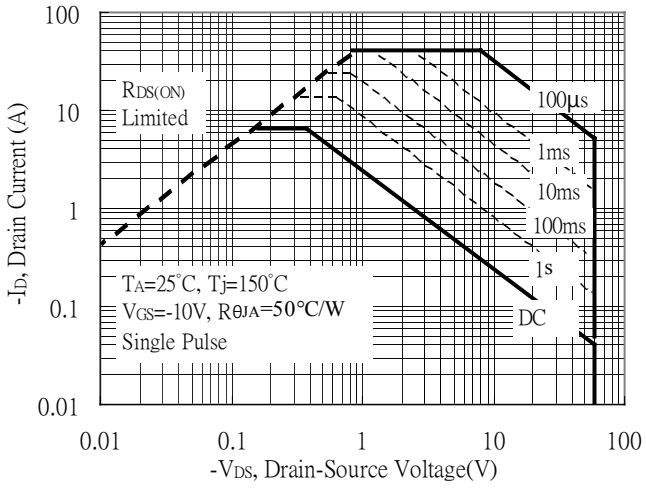
Forward Transfer Admittance vs Drain Current



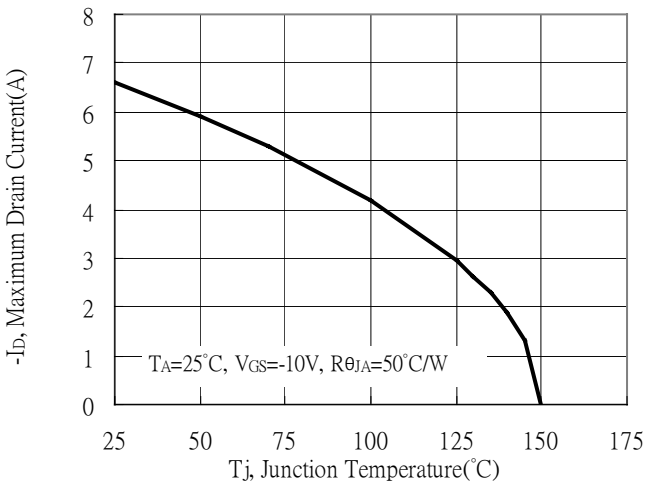
Gate Charge Characteristics



Maximum Safe Operating Area

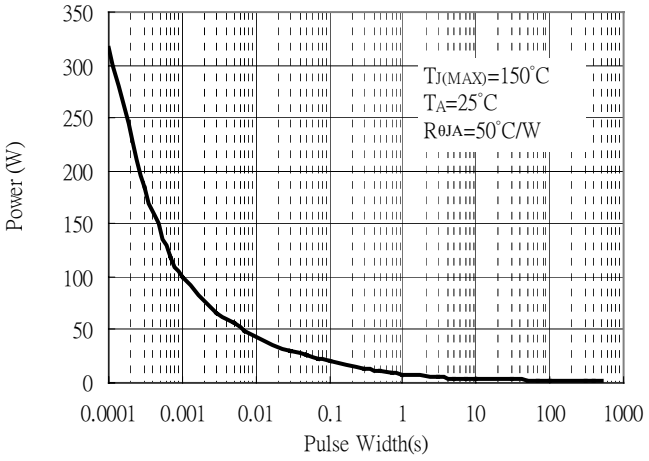


Maximum Drain Current vs JunctionTemperature

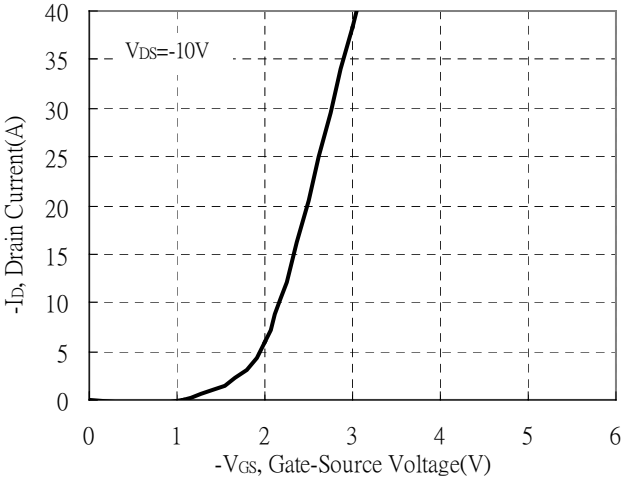


Typical Characteristics(Cont.)

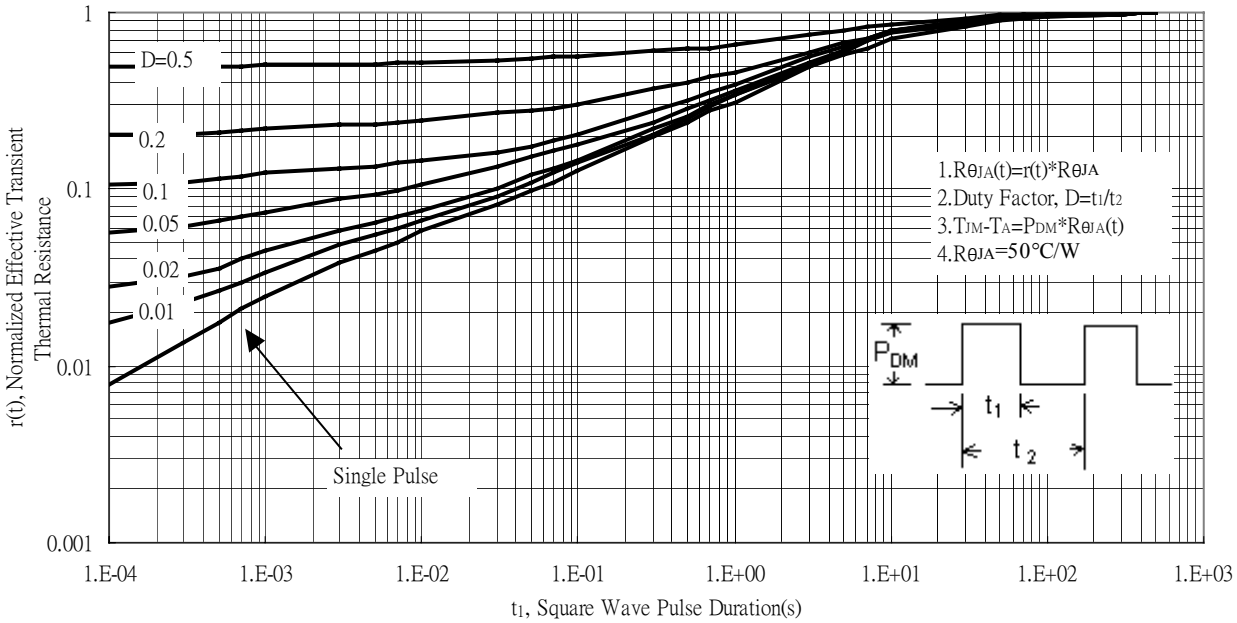
Single Pulse Power Rating, Junction to Ambient
(Note on page 2)



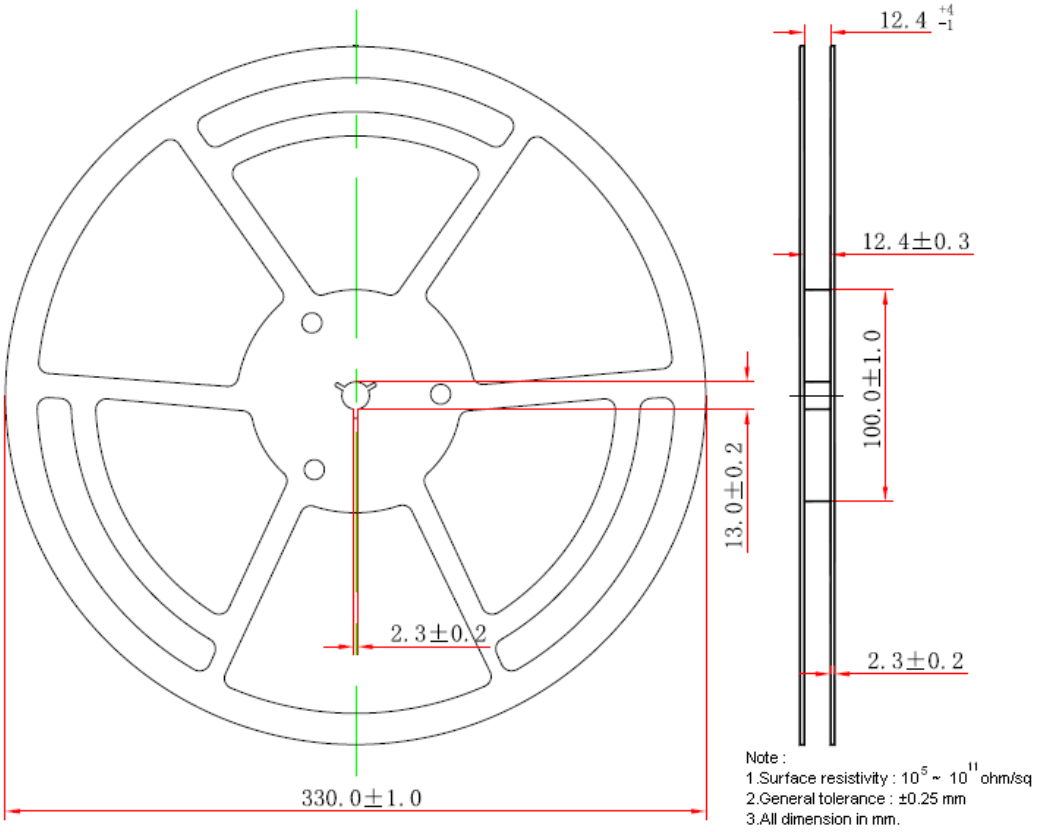
Typical Transfer Characteristics



Transient Thermal Response Curves

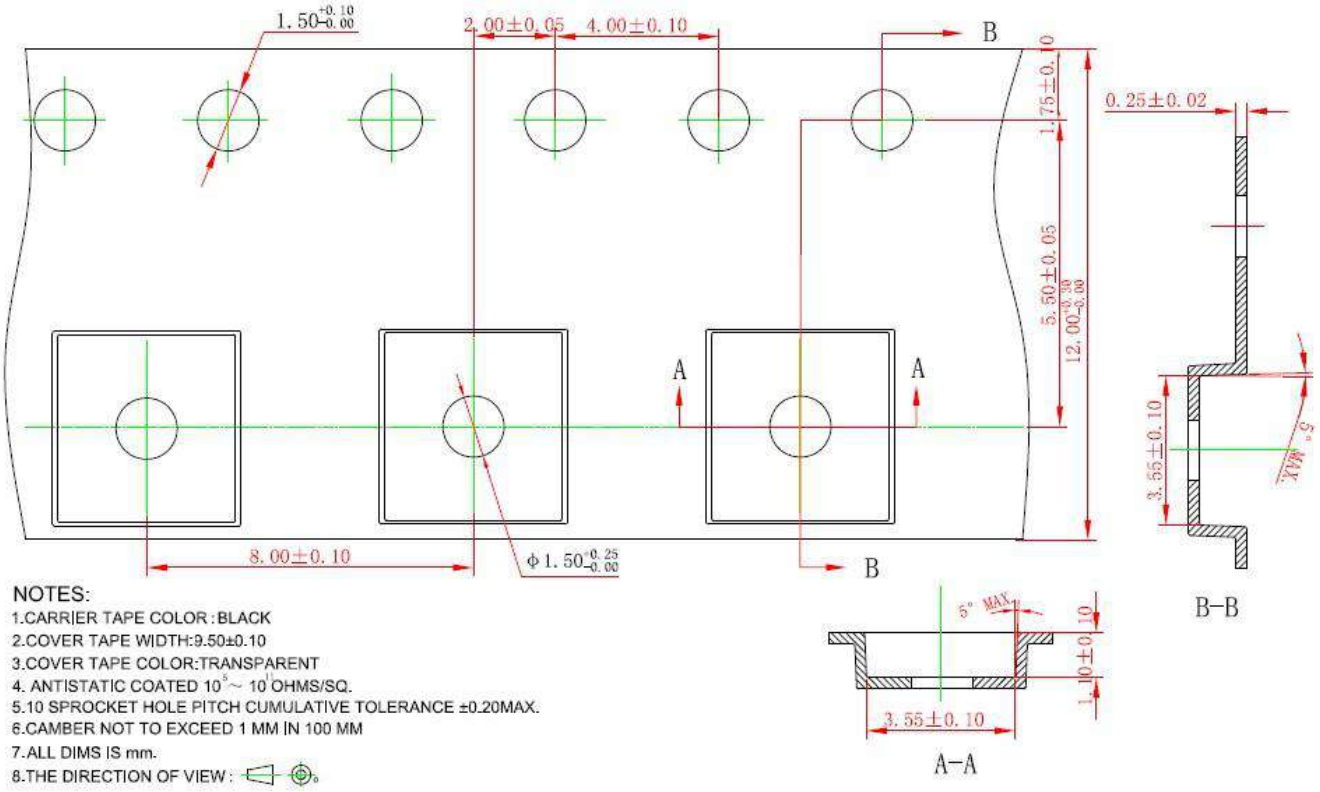


Reel Dimension



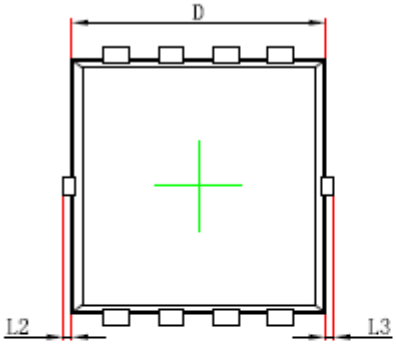
Note :
1.Surface resistivity : 10^5 ~ 10^{11} ohm/sq
2.General tolerance : ±0.25 mm
3.All dimension in mm.

Carrier Tape Dimension

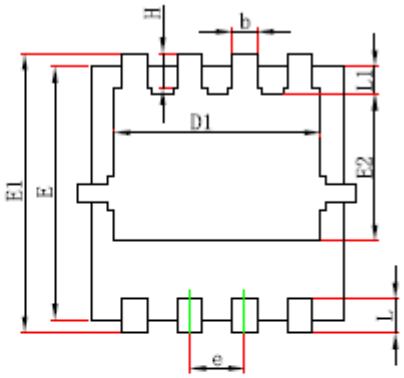


NOTES:
1.CARRIER TAPE COLOR : BLACK
2.COVER TAPE WIDTH:9.50±0.10
3.COVER TAPE COLOR:TRANSPARENT
4. ANTISTATIC COATED 10^5~ 10^{11} OHMS/SQ.
5.10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ±0.20MAX.
6.CAMBER NOT TO EXCEED 1 MM IN 100 MM
7.ALL DIMS IS mm.
8.THE DIRECTION OF VIEW :

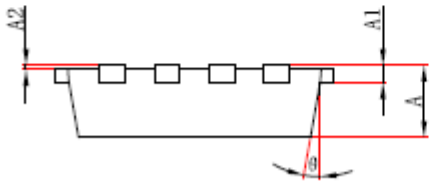
DFN3x3 Dimension



Top View

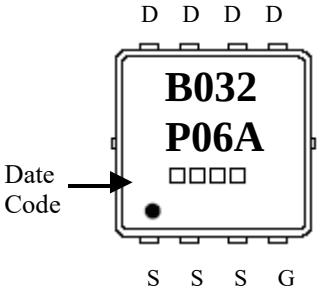


Bottom View



Side View

Marking:



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°