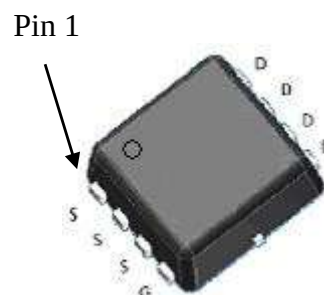


P-Channel Enhancement Mode Power MOSFET

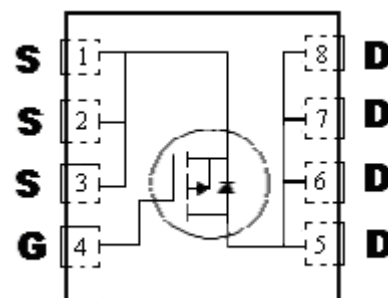
Features:

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

DFN3x3



BV _{DSS}	-30V
I _D @ T _C =25°C, V _{GS} =-10V	-44.0A
I _D @ T _A =25°C, V _{GS} =-10V	-12A
R _{DS(on)(MAX)} @V _{GS} =-10V, I _D =-10A	8.6 mΩ (typ.)
R _{DS(on)(MAX)} @V _{GS} =-4.5V, I _D =-8A	18.6mΩ (typ.)



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KSPRD9D0P03	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}	-30	V
Gate-Source Voltage	V _{GS}	±25	
Continuous Drain Current @ T _C =25°C, V _{GS} =-10V	I _D	-44.0	A
Continuous Drain Current @ T _C =100°C, V _{GS} =-10V		-27.8	
Continuous Drain Current @ T _A =25°C, V _{GS} =-10V		-12	
Continuous Drain Current @ T _A =70°C, V _{GS} =-10V		-9.6	
Pulsed Drain Current	I _{DM}	-176 *1	mJ
Avalanche Current @ L=0.1mH	I _{AS}	-40	
Avalanche Energy @ L=1mH, I _D =-24A, V _{DD} =-15V	E _{AS}	288 *4	
Repetitive Avalanche Energy @ L=0.05mH	E _{AR}	4 *2	W
Total Power Dissipation	P _D	T _C =25°C	
		T _C =100°C	
		T _A =25°C	
		T _A =70°C	
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}	3.5	°C/W
Thermal Resistance, Junction-to-ambient, max	R _{θJA}	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.
4. 100% tested by conditions of L=0.1mH, I_{AS}=-10A, V_{GS}=-10V, V_{DD}=-15V

Electrical 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
V _{GS(th)}	-1.5	-	-3.0		V _{DS} =V _{GS} , I _D =-250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±25V, V _{DS} =0V
I _{DSS}	-	-	-1	μA	V _{DS} =-24V, V _{GS} =0V
	-	-	-10		V _{DS} =-24V, V _{GS} =0V, T _j =125°C
R _{DS(ON)} *1	-	8.6	12	mΩ	V _{GS} =-10V, I _D =-10A
	-	18.6	25		V _{GS} =-4.5V, I _D =-8A
G _{FS} *1	-	21	-	S	V _{DS} =-5V, I _D =-10A

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Dynamic *4					
Ciss	-	2510	-	pF	V _{DS} =-15V, V _{GS} =0V, f=1MHz
Coss	-	353	-		
Crss	-	316	-		
t _{d(ON)} *1, 2	-	21.2	-	ns	V _{DD} =-15V, I _D =-1A, V _{GS} =-10V, R _G =6Ω
t _r *1, 2	-	25	-		
t _{d(OFF)} *1, 2	-	89.8	-		
t _f *1, 2	-	26.6	-		
Q _g *1, 2	-	48.9	-	nC	V _{DS} =-15V, I _D =-13A, V _{GS} =-10V
Q _{gs} *1, 2	-	9.2	-		
Q _{gd} *1, 2	-	12.2	-		
R _g	-	4	-	Ω	f=1MHz
Source-Drain Diode					
I _S *1	-	-	-4	A	
I _{SM} *3	-	-	-16		
V _{SD} *1	-	-0.74	-1	V	I _F =-1A, V _{GS} =0V
t _{rr}	-	17.8	-	ns	I _F =-13A, dI _F /dt=100A/μs
Q _{rr}	-	9.7	-	nC	

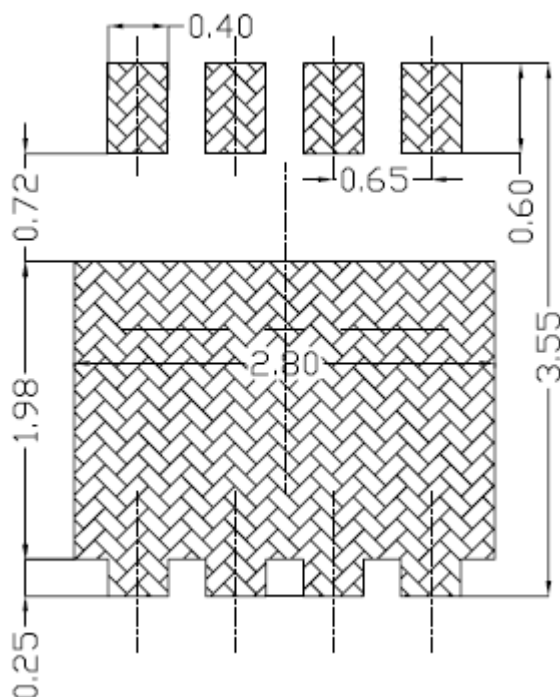
Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

*2.Independent of operating temperature

*3.Pulse width limited by maximum junction temperature.

*4.Guaranteed by design, not subject to production testing.

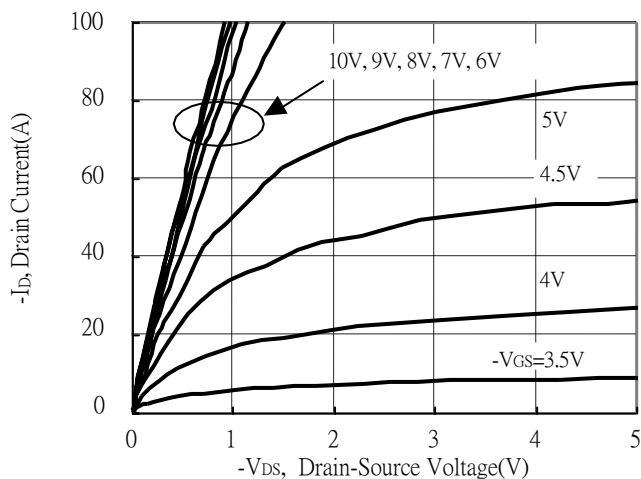
Recommended Soldering Footprint



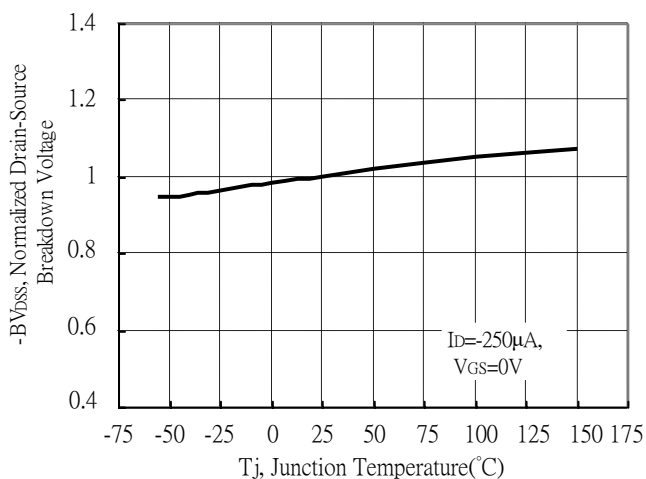
unit : mm

Typical Characteristics

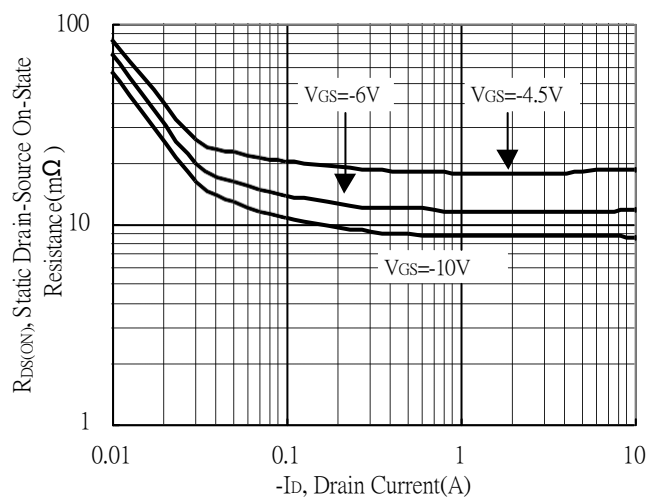
Typical Output Characteristics



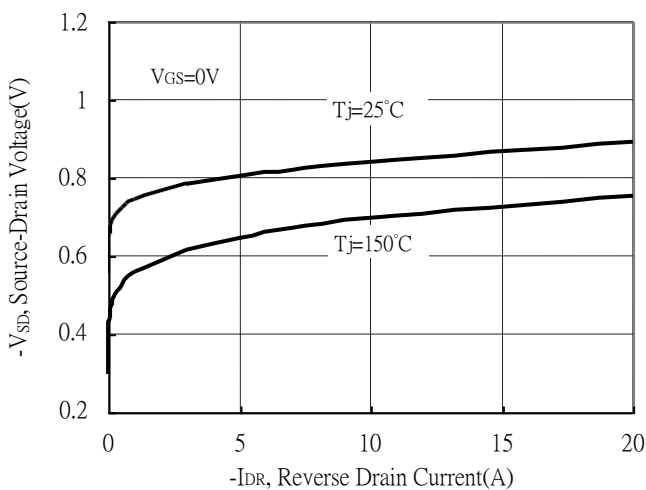
Breakdown Voltage vs Ambient Temperature



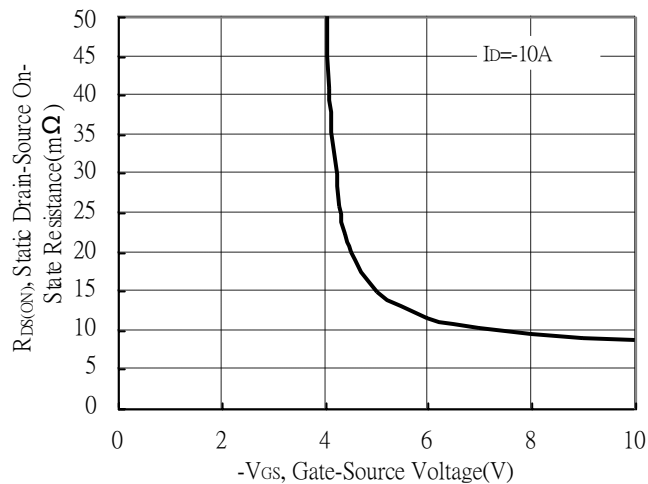
Static Drain-Source On-State resistance vs Drain Current



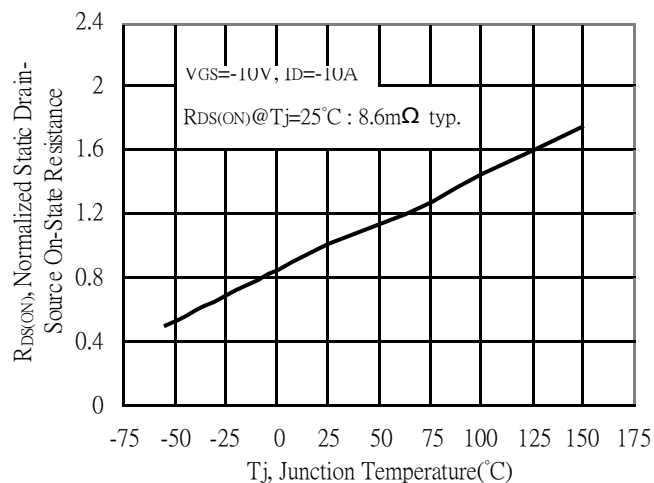
Reverse Drain Current vs Source-Drain Voltage



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

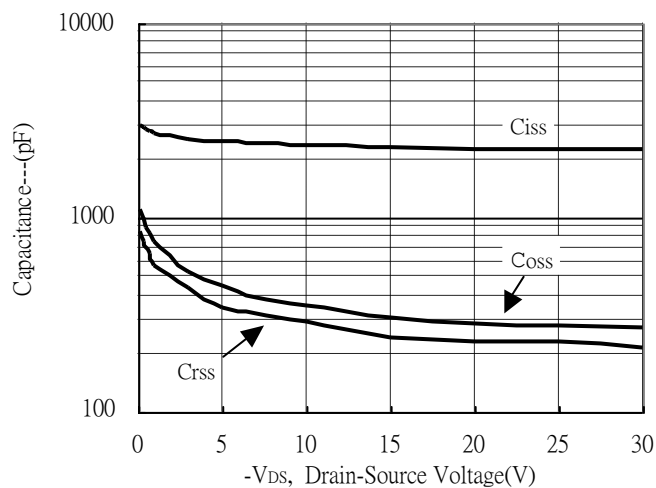


Drain-Source On-State Resistance vs Junction Temperature

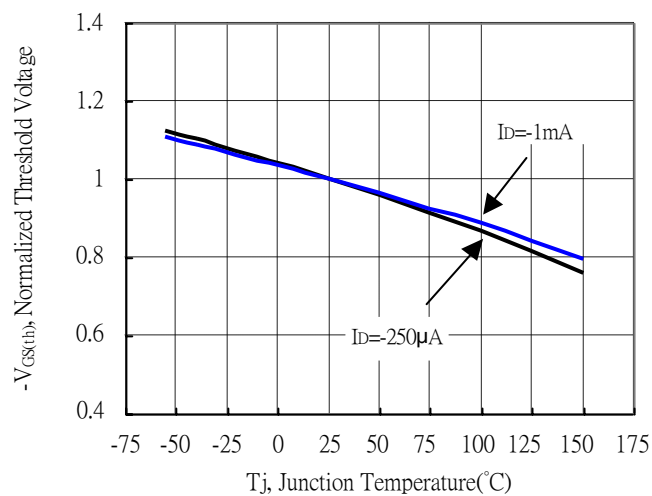


Typical Characteristics(Cont.)

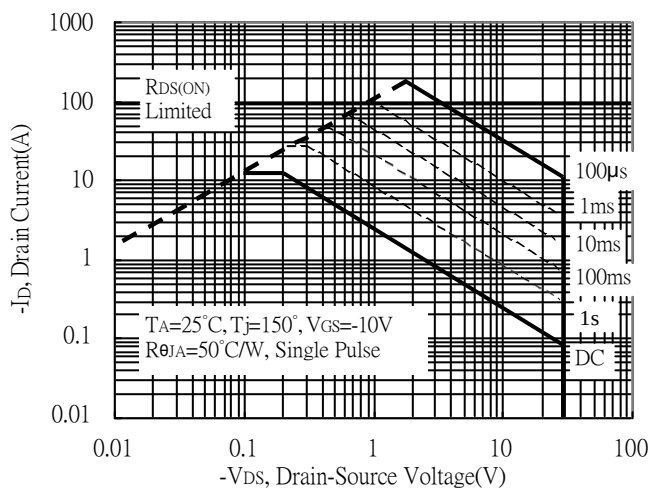
Capacitance vs Drain-to-Source Voltage



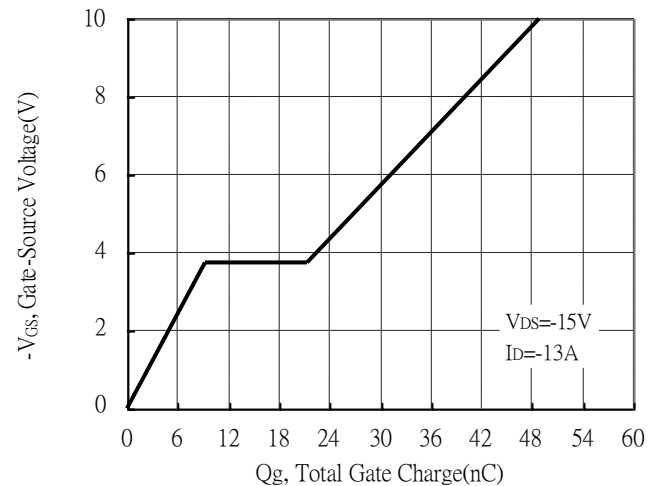
Threshold Voltage vs Junction Temperature



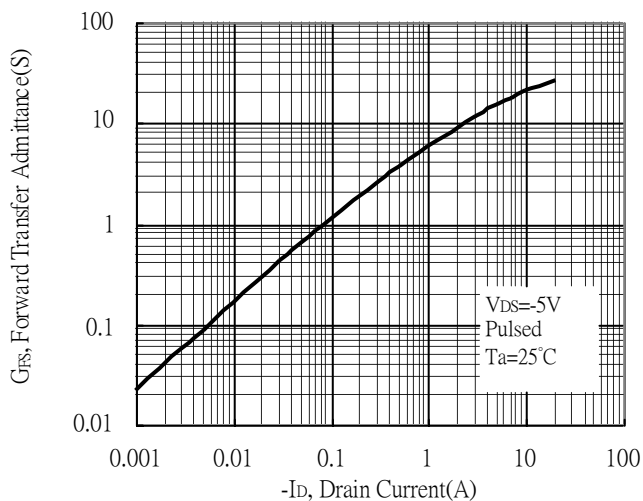
Maximum Safe Operating Area



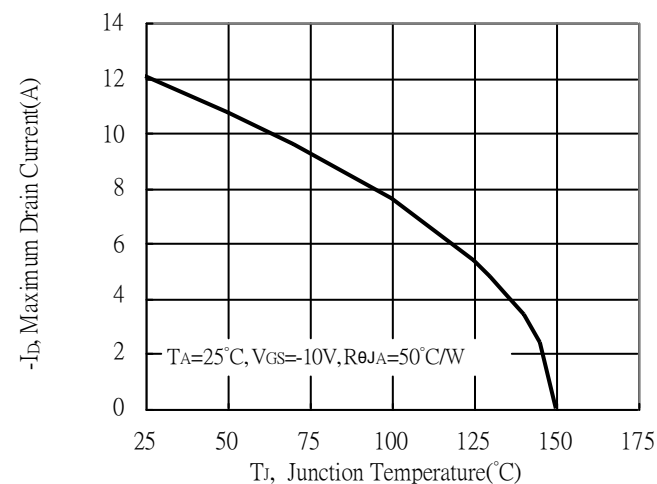
Gate Charge Characteristics



Forward Transfer Admittance vs Drain Current

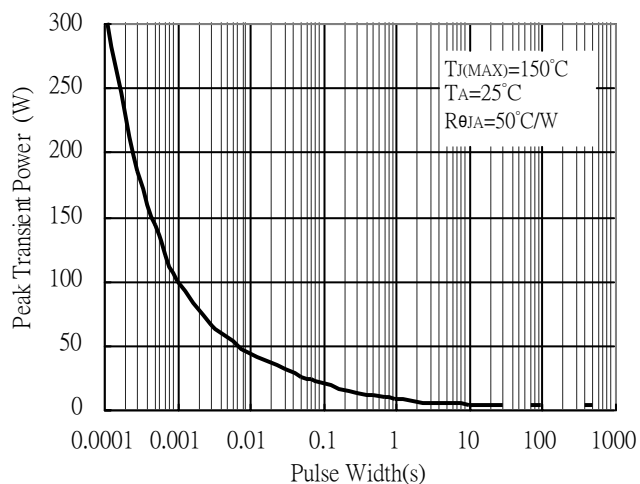


Maximum Drain Current vs Junction Temperature

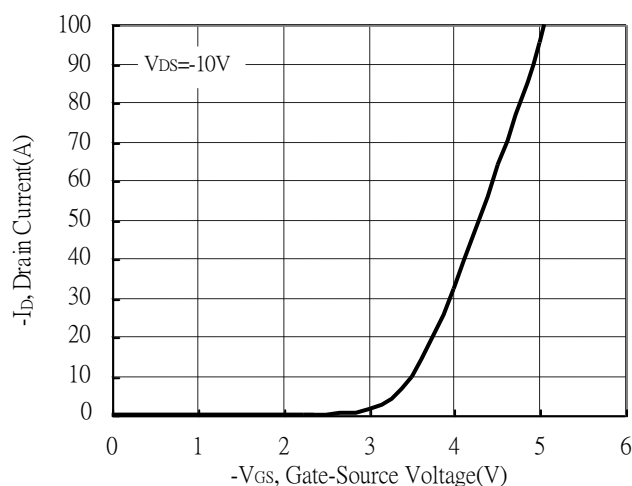


Typical Characteristics(Cont.)

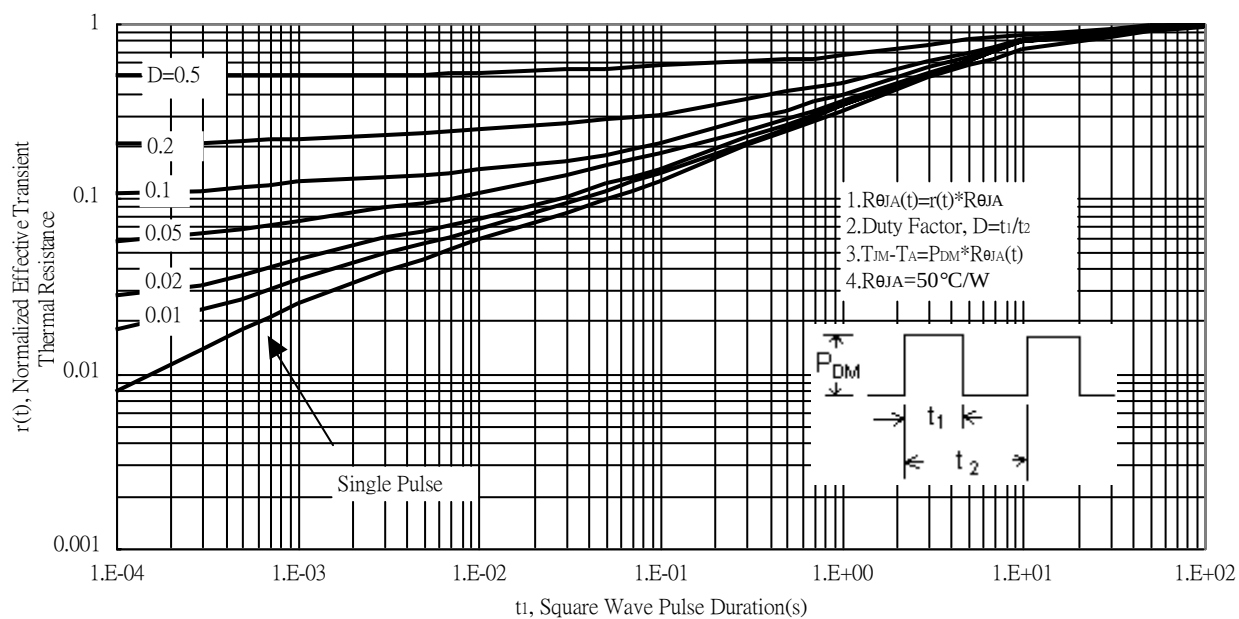
Single Pulse Maximum Power Dissipation



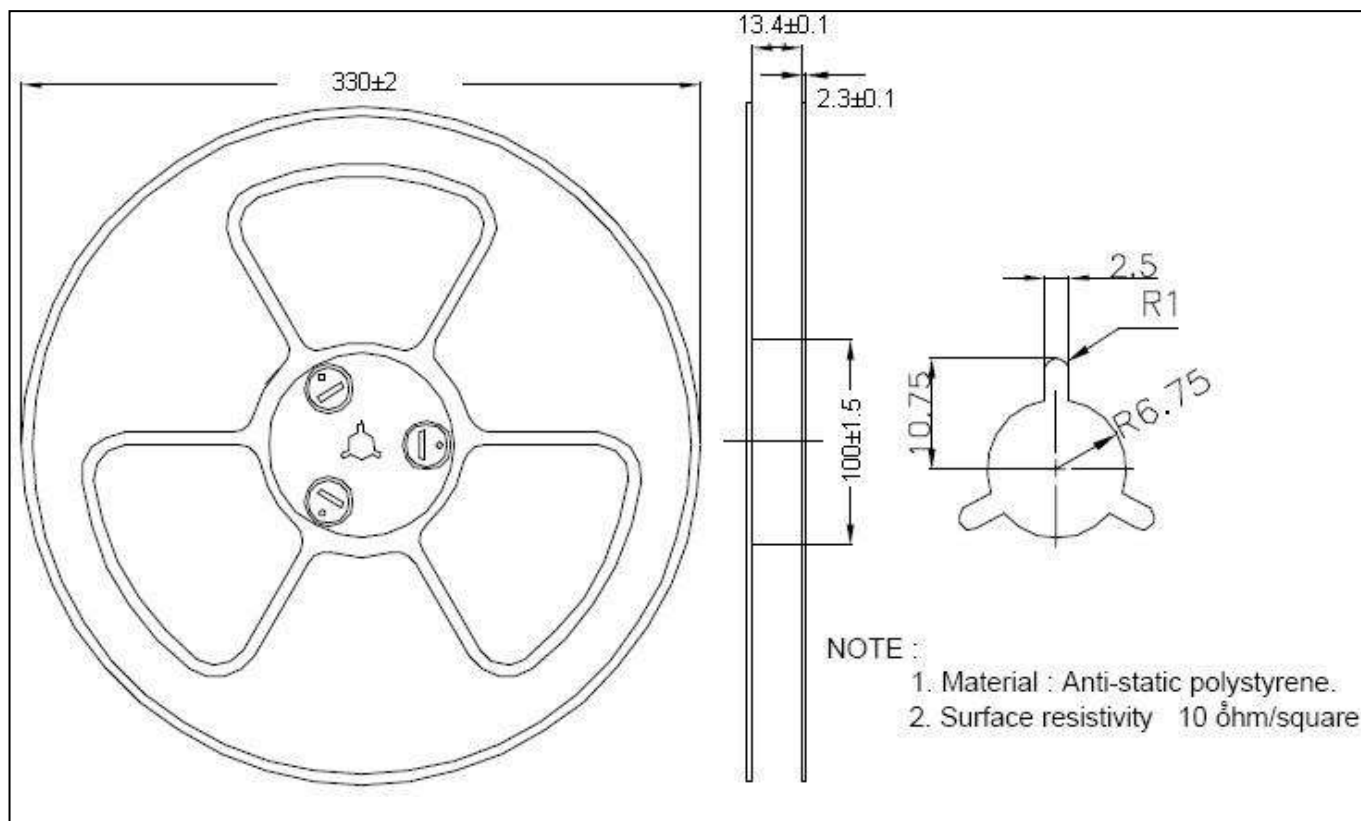
Typical Transfer Characteristics



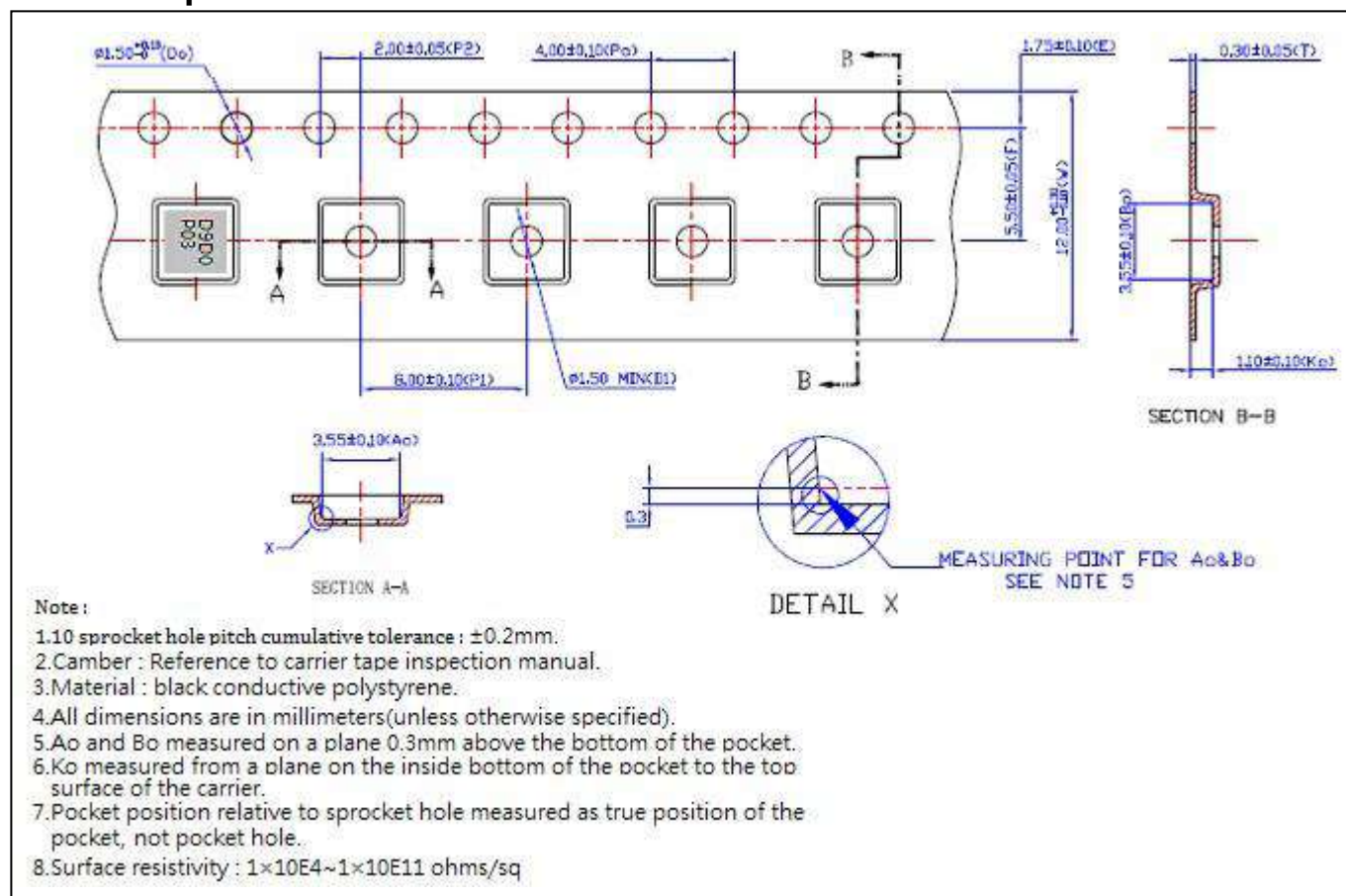
Transient Thermal Response Curves



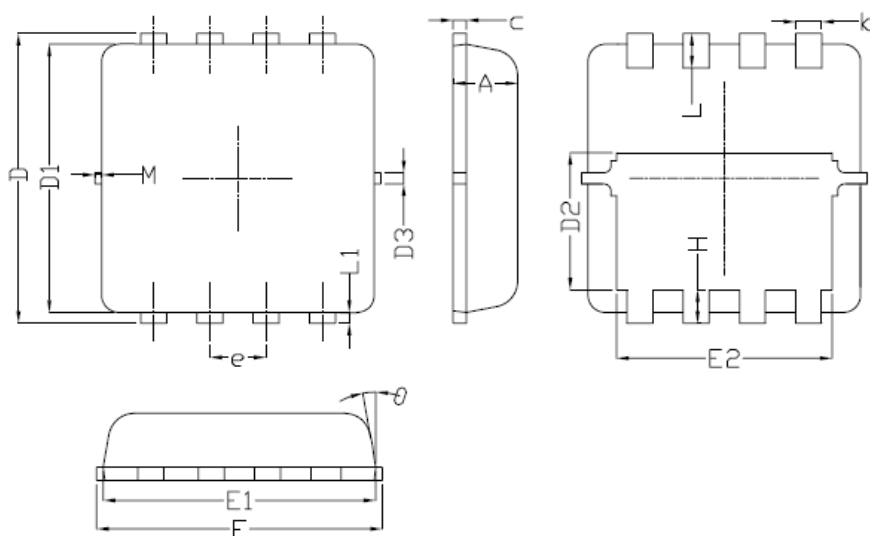
Reel Dimension



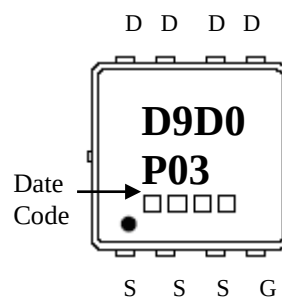
Carrier Tape Dimension



DFN3×3 Dimension



Marking:



8-Lead DFN3x3 Plastic Package

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.70	0.80	0.028	0.031	E1	3.00	3.20	0.118	0.126
b	0.25	0.35	0.010	0.014	E2	2.39	2.59	0.094	0.102
c	0.10	0.25	0.004	0.010	e	0.65 BSC		0.026 BSC	
D	3.25	3.45	0.128	0.136	H	0.30	0.50	0.012	0.020
D1	3.00	3.20	0.118	0.126	L	0.30	0.50	0.012	0.020
D2	1.48	1.68	0.058	0.066	L1	0.13 TYP		0.005 TYP	
D3	0.13 TYP		0.005 TYP		θ	8°	12°	8°	12°
E	3.20	3.40	0.126	0.134	M	-	0.15	-	0.006