

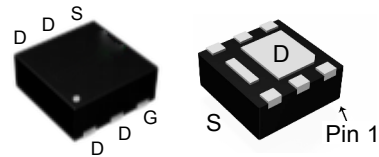
Features

- 30V/20A,
 $R_{DS(ON)} = 4m\Omega(\text{typ.}) @ V_{GS} = 10V$
 $R_{DS(ON)} = 6m\Omega(\text{typ.}) @ V_{GS} = 4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- 100% UIS + R_g Tested
- Quantity:5K/reel

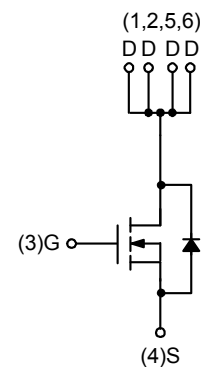
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

Pin Description



DFN2x2A-6_EP



N-Channel MOSFET

Marking Information

RSTN30N04A5 QG :



XXXXXX - Lot Code

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	± 20	
I_D^a	Continuous Drain Current ($V_{GS}=10\text{V}$)	$T_A=25^\circ\text{C}$	20
		$T_A=70^\circ\text{C}$	8
I_{DM}^a	300 μs Pulsed Drain Current ($V_{GS}=10\text{V}$)	60	A
I_S^a	Diode Continuous Forward Current	20	
I_{AS}^b	Avalanche Current, Single pulse ($L=0.5\text{mH}$)	20	
E_{AS}^b	Avalanche Energy, Single pulse ($L=0.5\text{mH}$)	100	
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	
P_D^a	Maximum Power Dissipation	$T_A=25^\circ\text{C}$	1.66
		$T_A=70^\circ\text{C}$	1.06
$R_{\theta JA}^a$	Thermal Resistance-Junction to Ambient	$t \leq 10\text{s}$	40
		Steady State	75

Note a : Surface Mounted on 1in² pad area, $t \leq 10\text{sec}$.

Note b : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^\circ\text{C}$).

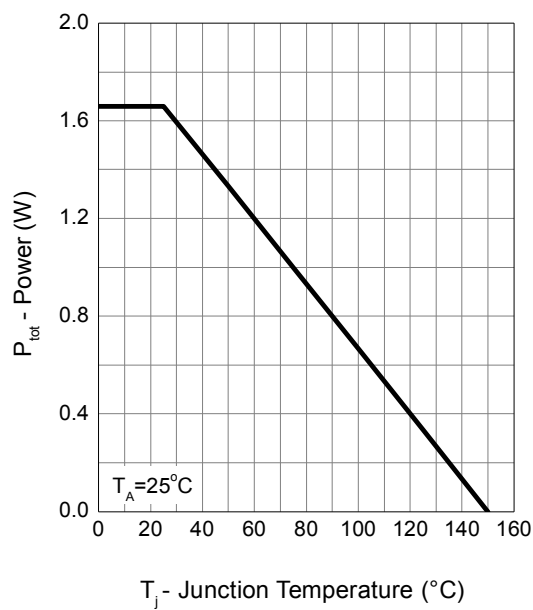
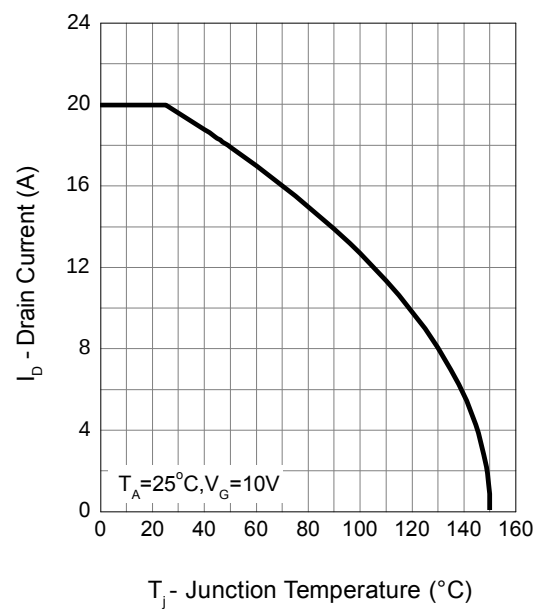
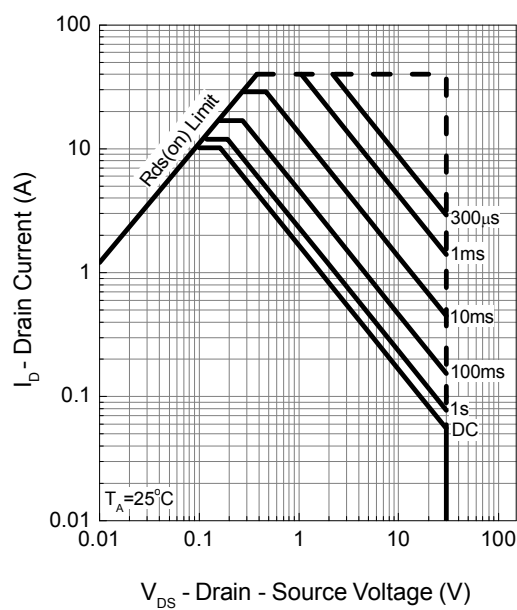
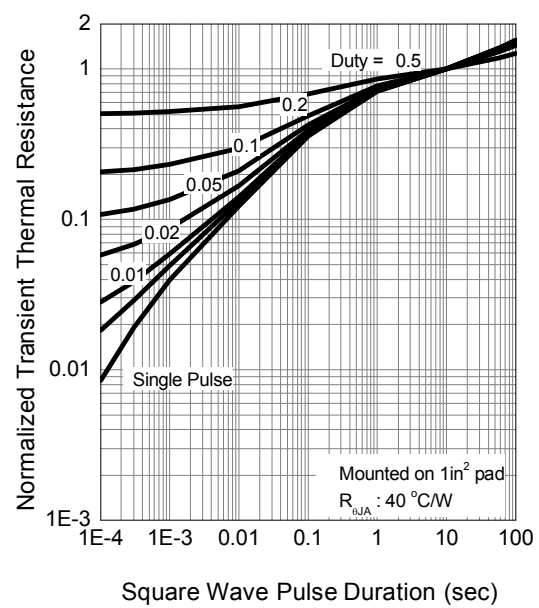
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.0	1.8	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^c	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =8A	-	4	4.5	mΩ
		V _{GS} =4.5V, I _{DS} =5A	-	6	8	
Diode Characteristics						
V _{SD} ^c	Diode Forward Voltage	I _{SD} =3A, V _{GS} =0V	-	0.76	1.1	V
t _{rr} ^d	Reverse Recovery Time	I _{SD} =8A, dI _{SD} /dt=100A/μs	-	12.5	-	ns
Q _{rr} ^d	Reverse Recovery Charge		-	4.5	-	nC
Dynamic Characteristics ^d						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	0.5	0.8	2	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	730	880	1030	pF
C _{oss}	Output Capacitance		122	142	162	
C _{rss}	Reverse Transfer Capacitance		80	90	115	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	12	18	ns
t _r	Turn-on Rise Time		-	11	16	
t _{d(OFF)}	Turn-off Delay Time		-	32	48	
t _f	Turn-off Fall Time		-	6.8	8	
Gate Charge Characteristics ^d						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =8A	-	17	21	nC
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =8A	-	8.2	11	
Q _{gth}	Threshold Gate Charge		-	1.5	1.8	
Q _{gs}	Gate-Source Charge		-	2.9	3.5	
Q _{gd}	Gate-Drain Charge		-	3.2	4.1	

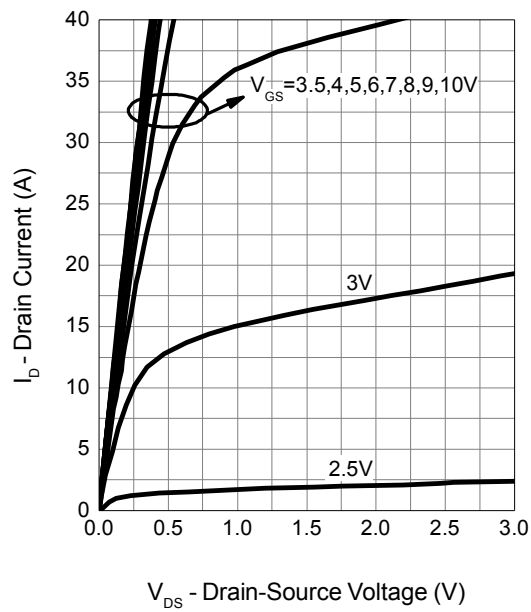
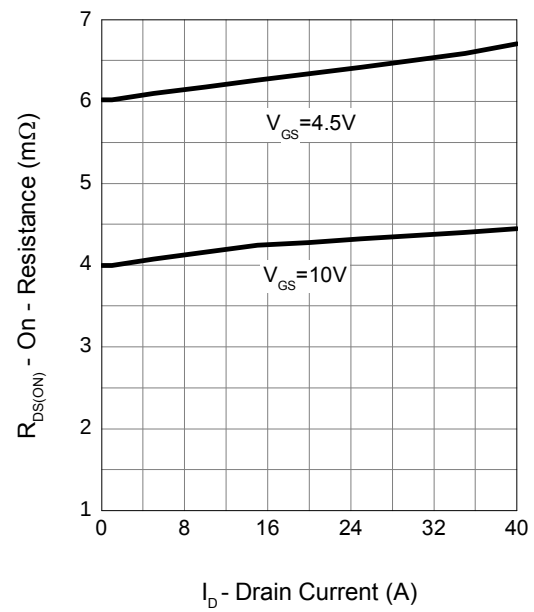
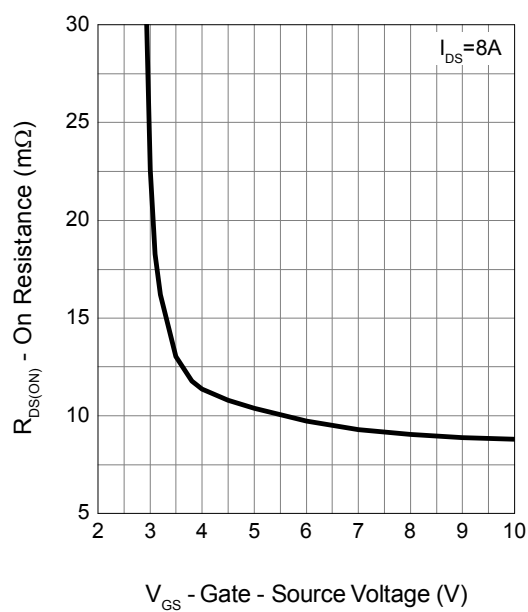
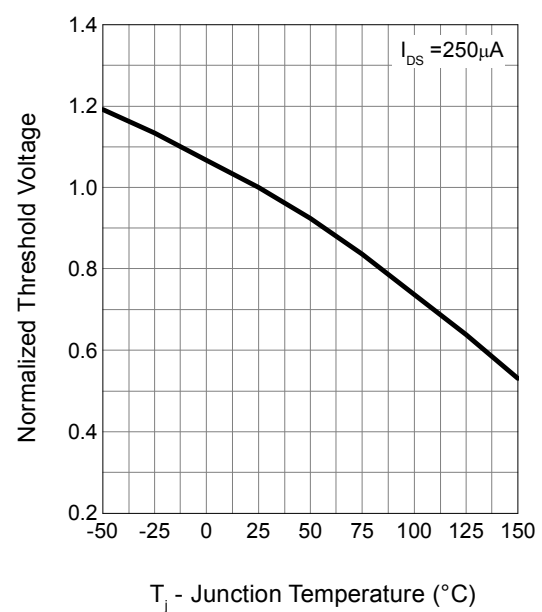
Note c Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%.

Note d Guaranteed by design, not subject to production testing.

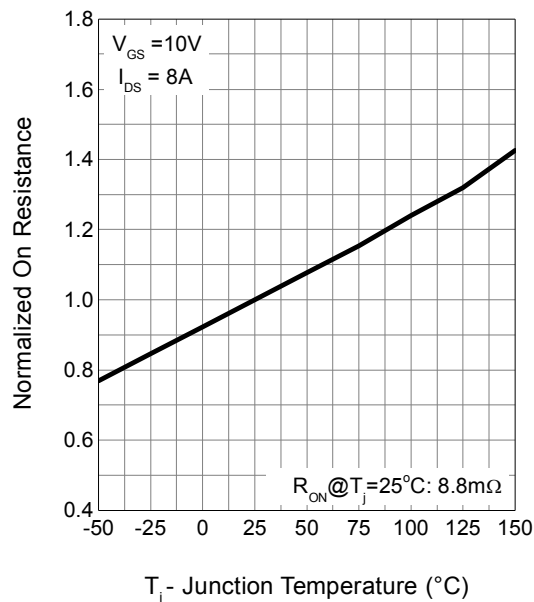
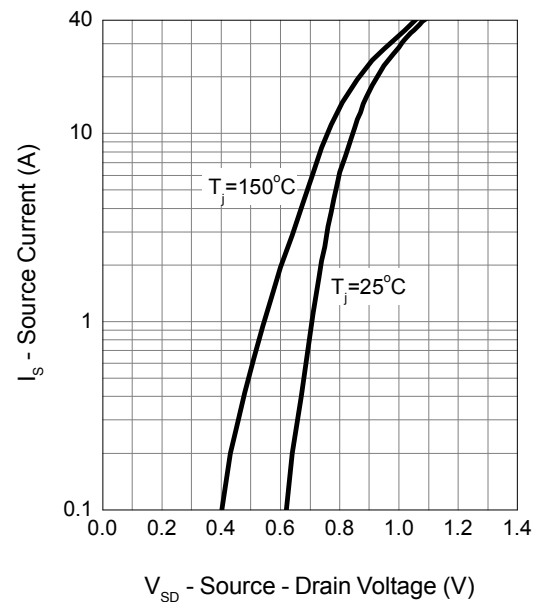
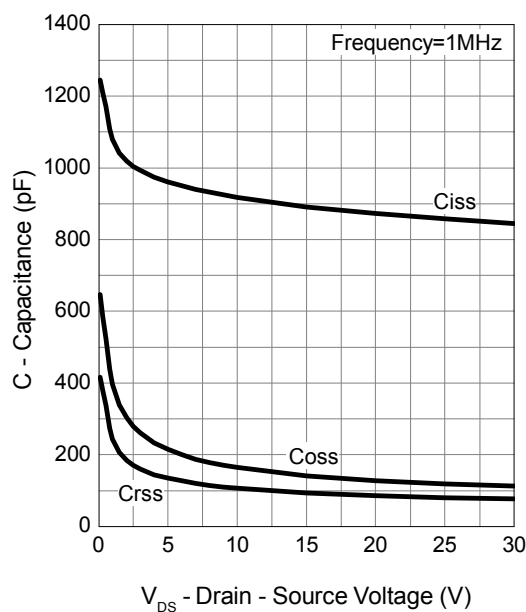
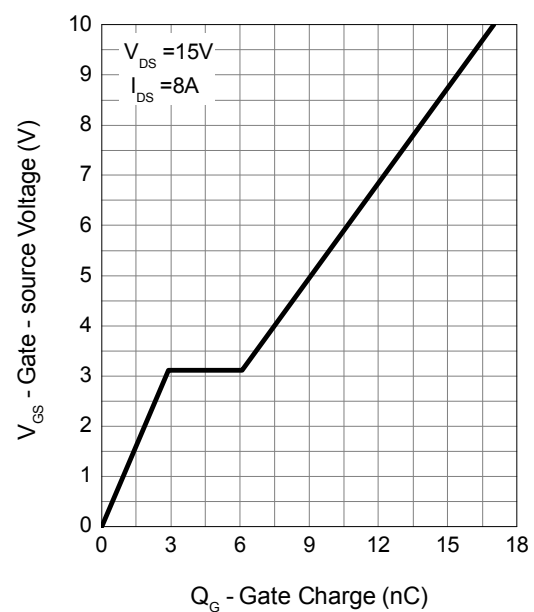
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


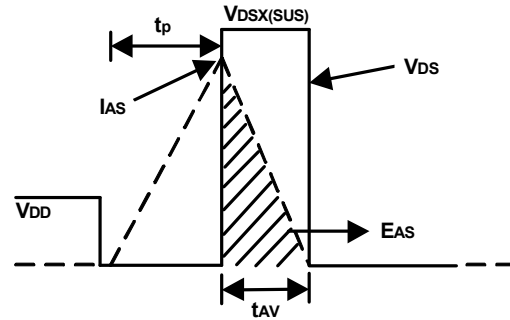
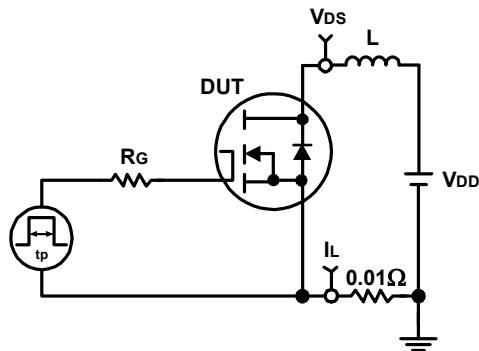
Typical Operating Characteristics (Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


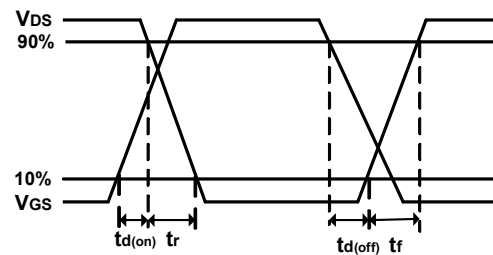
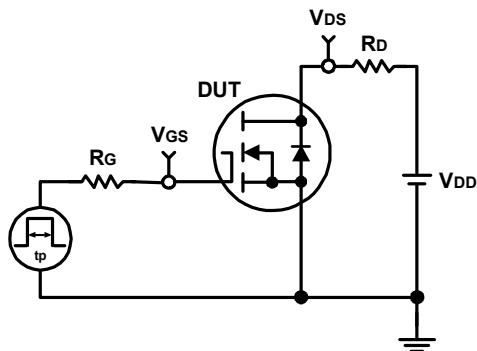
Typical Operating Characteristics (Cont.)

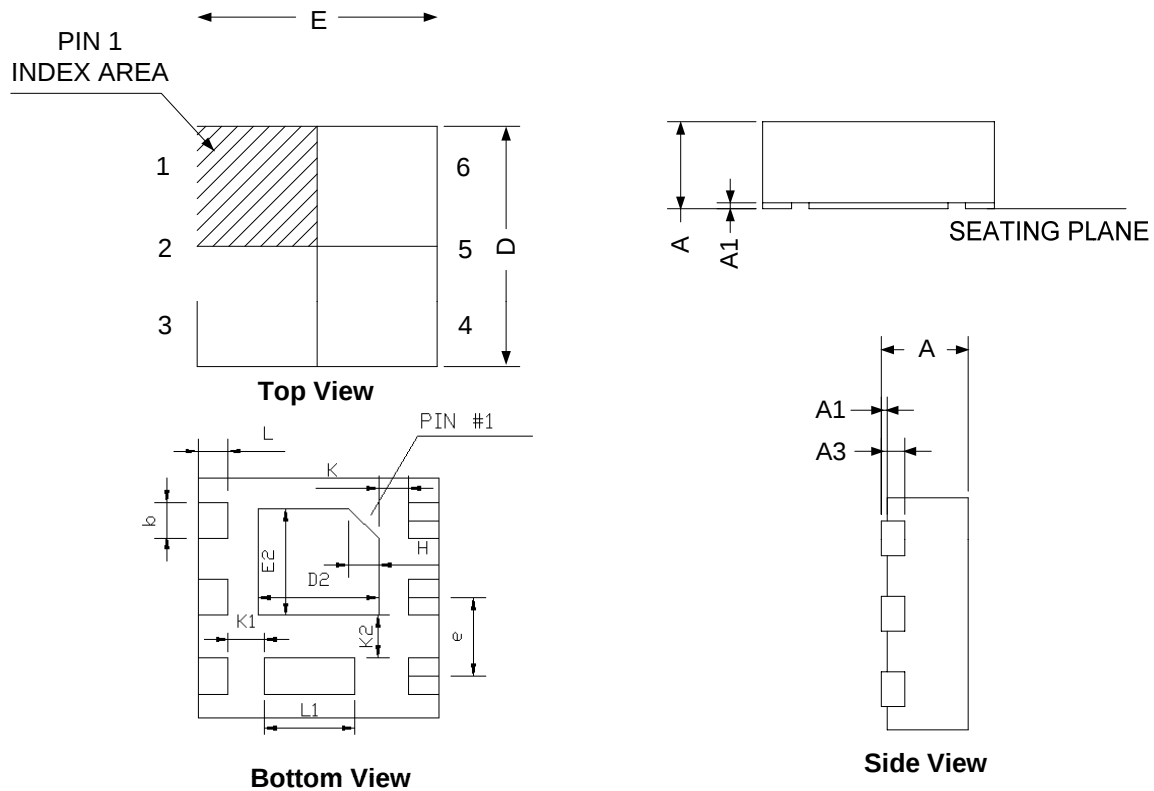
Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Avalanche Test Circuit and Waveforms

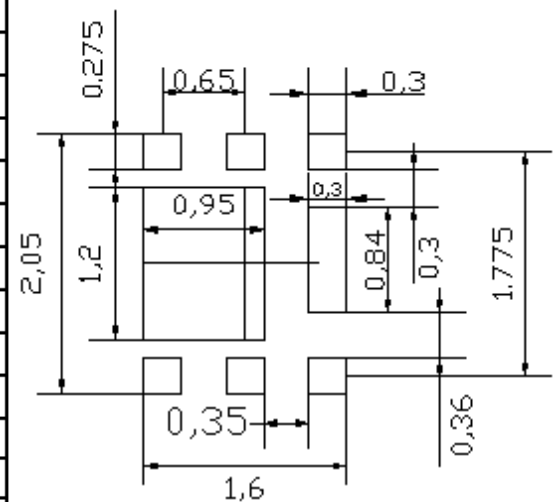


Switching Time Test Circuit and Waveforms



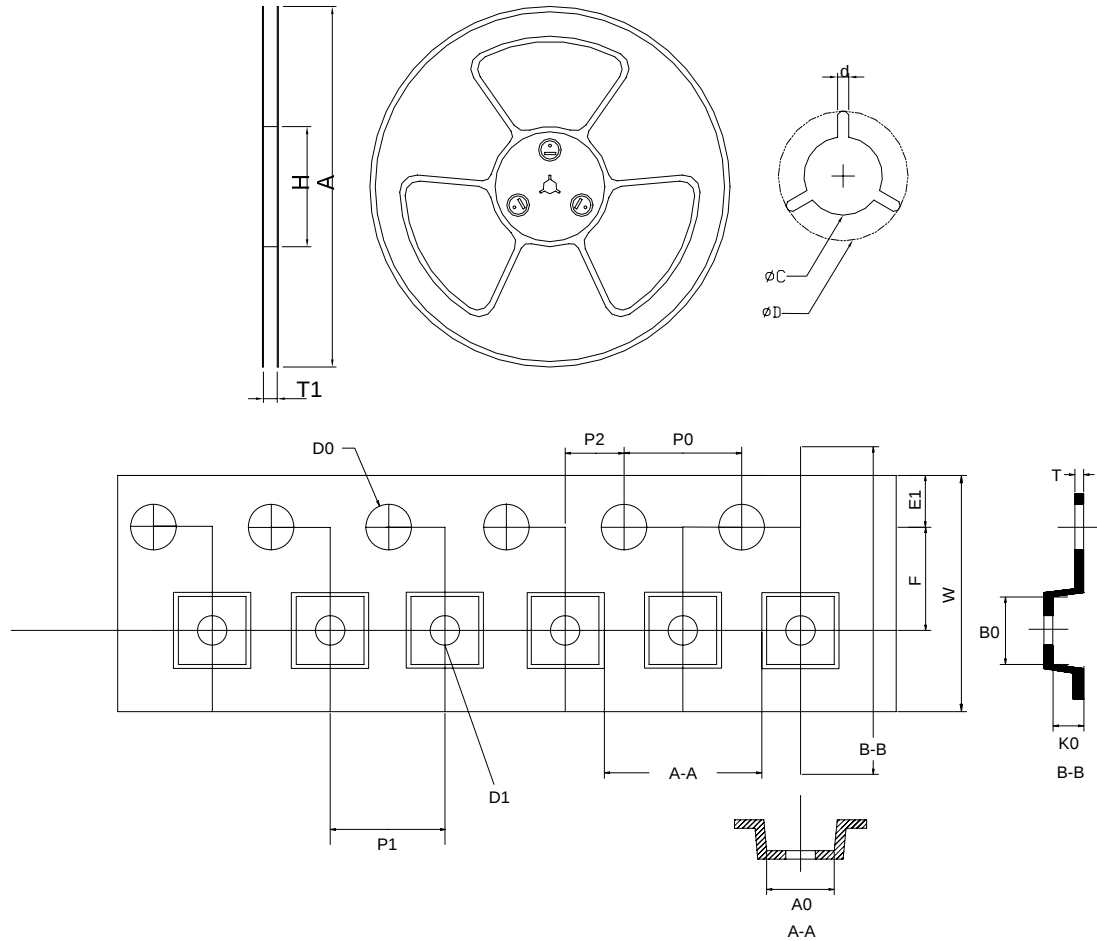


SYMBOLS	DFN2x2A-6_EP1_S			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	0.80	0.028	0.031
A1	0.00	0.05	0.000	0.002
A3	0.2 REF		0.008 REF	
b	0.25	0.35	0.010	0.014
D	1.90	2.10	0.075	0.083
D2	0.90	1.10	0.035	0.043
E	1.90	2.10	0.075	0.083
E2	0.80	1.00	0.031	0.039
e	0.55	0.75	0.022	0.030
H	0.25 REF		0.01 REF	
K	0.15		0.006	
K1	0.20		0.008	
K2	0.25		0.010	
L	0.20	0.30	0.008	0.012
L1	0.65	0.85	0.026	0.033

RECOMMENDED LAND PATTERN


UNIT: mm

A. Reel & Carrier spec. :



Application	A	H	T1	C	d	D	W	E1	F
DFN2x2A-6_EP	178.0±2.00	60.0±0.50	9.0±2.00	13.0+0.50 -0.20	2.0±0.20	21.0±0.50	8.0+0.30 -0.10	1.75±0.10	3.5±0.05
	P0	P1	P2	D0	D1	T	A0	B0	K0
	4.0±0.10	4.0±0.10	2.0±0.05	1.5+0.10 -0.00	1.0 MIN.	0.3±0.05	2.3±0.10	2.3±0.10	1.05±0.10