

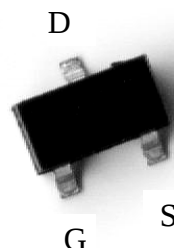
20V N-CHANNEL Enhancement Mode MOSFET

Outline

Features:

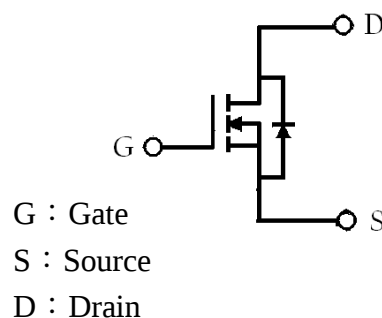
- Low on-resistance
- Capable of 2.5V gate drive
- Excellent thermal and electrical capabilities
- Compact and low profile SOT-23 package
- Pb-free lead plating and halogen-free package

SOT-23



Equivalent Circuit

KWN2300N3



Ordering Information

Device	Package	Shipping
KWN2300N3	SOT-23 (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}	20	V
Gate-Source Voltage	V _{GS}	±8	V
Continuous Drain Current @ TA=25°C, V _{GS} =4.5V (Note 3)	I _D	6.3	A
Continuous Drain Current @ TA=70°C, V _{GS} =4.5V (Note 3)	I _D	5	A
Pulsed Drain Current (Note 1, 2)	I _{DM}	20	A
Maximum Power Dissipation @ TA=25°C (Note 3)	P _D	1.38	W
Linear Derating Factor		0.01	W/°C
Thermal Resistance, Junction-to-Ambient (Note 3)	R _{th,ja}	90	°C/W
Operating Junction and Storage Temperature	T _j , T _{stg}	-55~+150	°C

Note : 1. Pulse width limited by maximum junction temperature.
2. Pulse width ≤ 300μs, duty cycle ≤ 2%.
3. Surface mounted on FR-4 board, t ≤ 10sec.

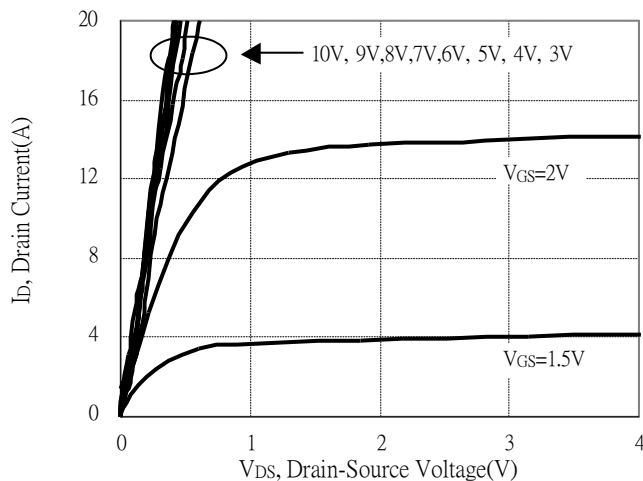
Electrical Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	20	-	-	V	V _{GS} =0, I _D =250μA
V _{GS(th)}	0.5	0.65	1.0	V	V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±8V, V _{DS} =0
I _{DSS}	-	-	1	μA	V _{DS} =20V, V _{GS} =0
I _{DSS}	-	-	25	μA	V _{DS} =16V, V _{GS} =0, T _j =70°C
*R _{DS(ON)}	-	23	28	mΩ	V _{GS} =4.5V, I _D =6A
	-	30	38		V _{GS} =2.5V, I _D =5.2A
	-	64	96		V _{GS} =1.5V, I _D =500mA
*G _{FS}	-	8	-	S	V _{DS} =5V, I _D =3A
Dynamic					
C _{iss}	-	742	-	pF	V _{DS} =15V, V _{GS} =0, f=1MHz
C _{oss}	-	66	-		
C _{rss}	-	78	-		
t _{d(ON)}	-	8	-	ns	V _{DD} =10V, I _D =1A, V _{GS} =4.5V, R _G =6Ω
t _r	-	12	-		
t _{d(OFF)}	-	23	-		
t _f	-	14	-		
Q _g	-	9	-	nC	V _{DS} =10V, I _D =6A, V _{GS} =4.5V
Q _{gs}	-	1.5	-		
Q _{gd}	-	2.6	-		
Source-Drain Diode					
*V _{SD}	-	0.78	1.3	V	V _{GS} =0V, I _S =1.25A

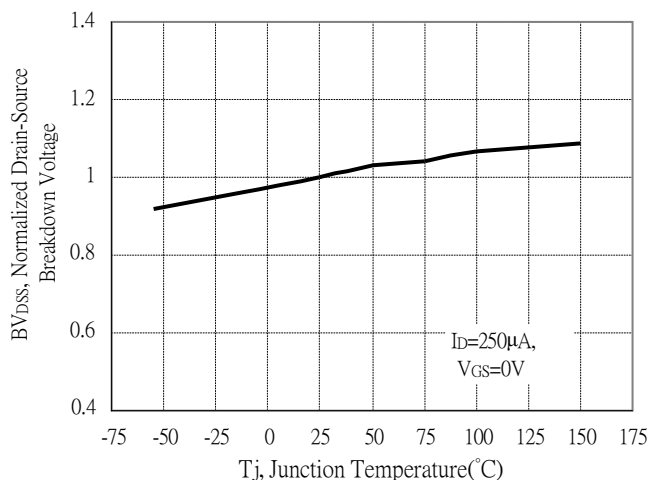
*Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

Typical Characteristics

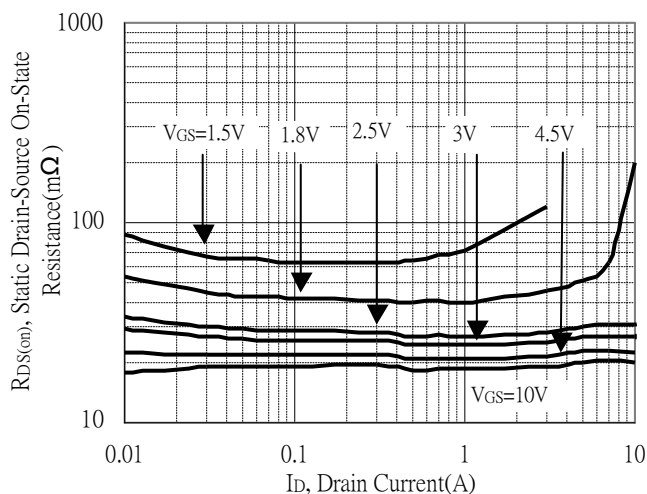
Typical Output Characteristics



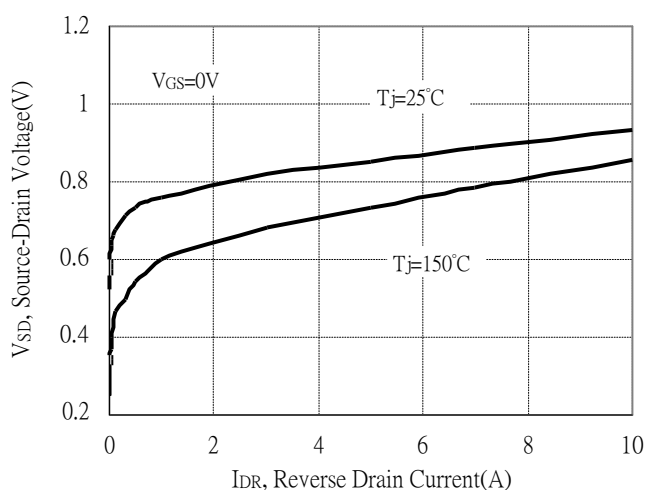
Breakdown Voltage vs Ambient Temperature



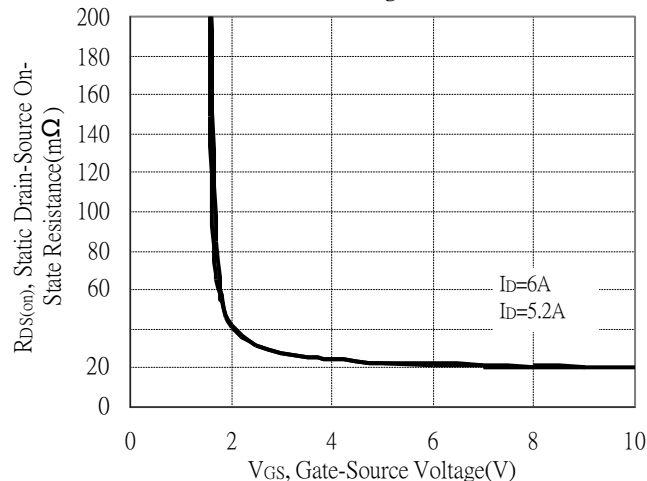
Static Drain-Source On-State resistance vs Drain Current



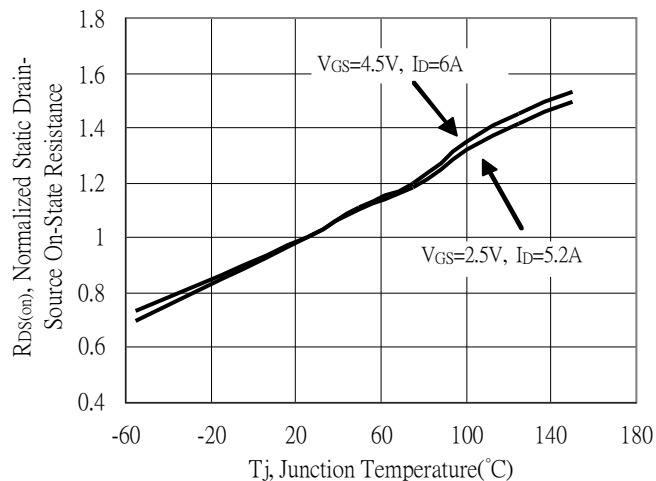
Reverse Drain Current vs Source-Drain Voltage



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

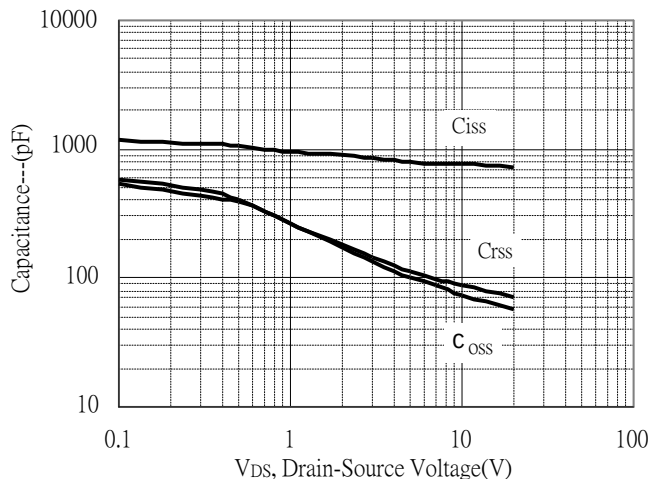


Drain-Source On-State Resistance vs Junction Temperature

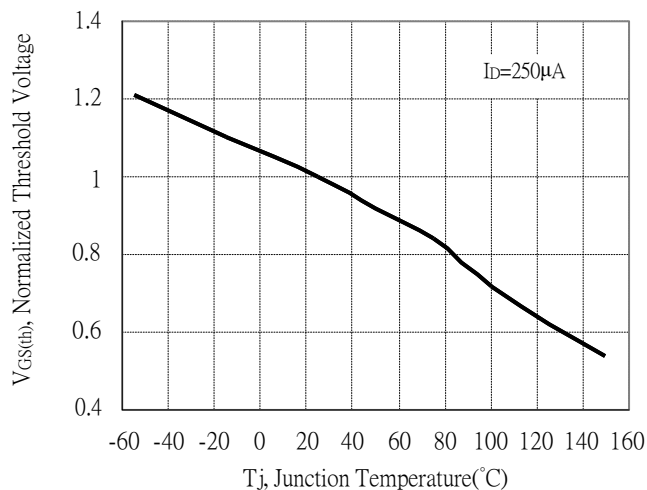


Typical Characteristics(Cont.)

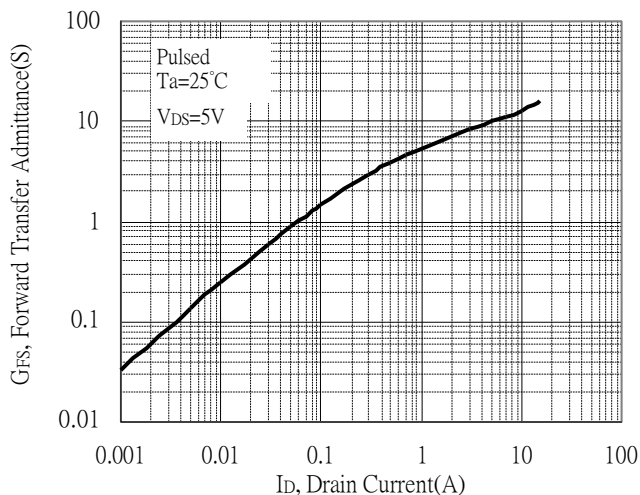
Capacitance vs Drain-to-Source Voltage



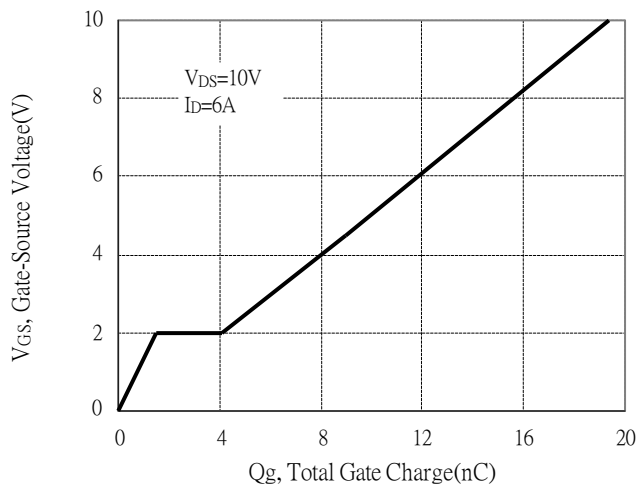
Threshold Voltage vs Junction Temperature



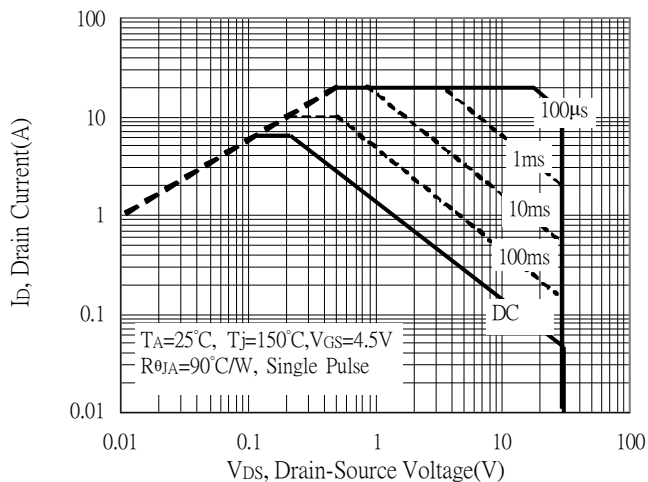
Forward Transfer Admittance vs Drain Current



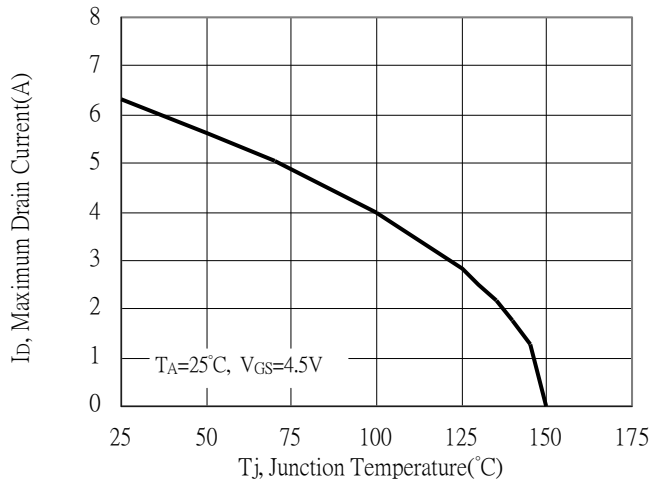
Gate Charge Characteristics



Maximum Safe Operating Area

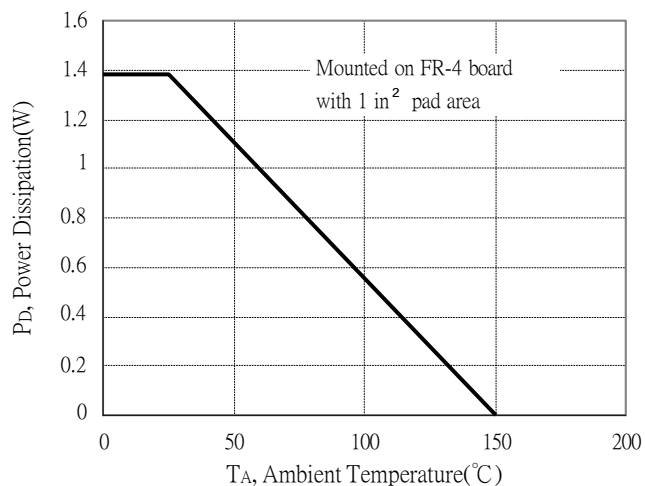


Maximum Drain Current vs Junction Temperature

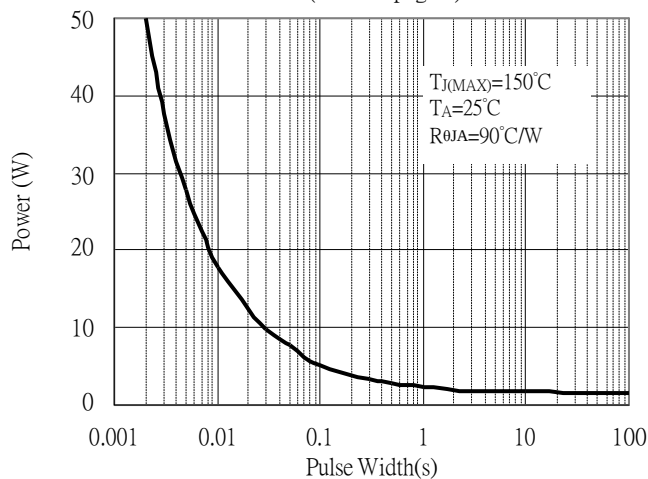


Typical Characteristics(Cont.)

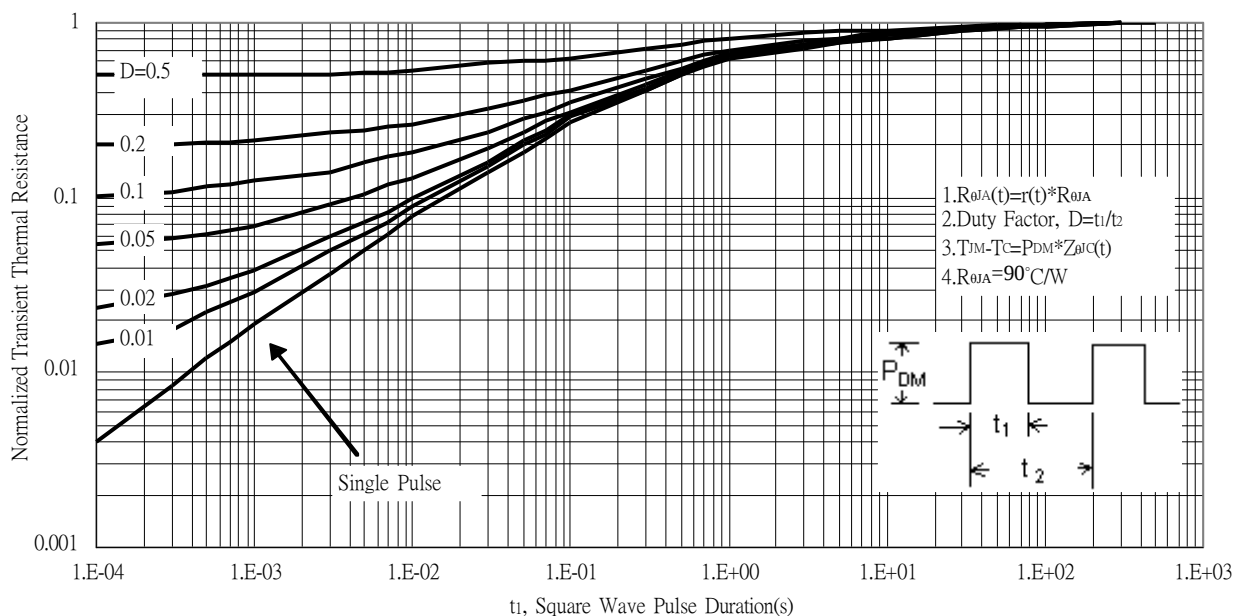
Power Derating Curve



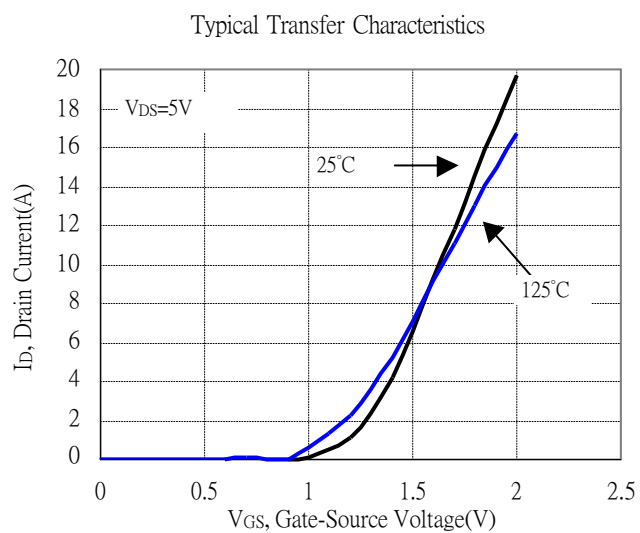
Single Pulse Power Rating, Junction to Ambient
(Note on page 1)



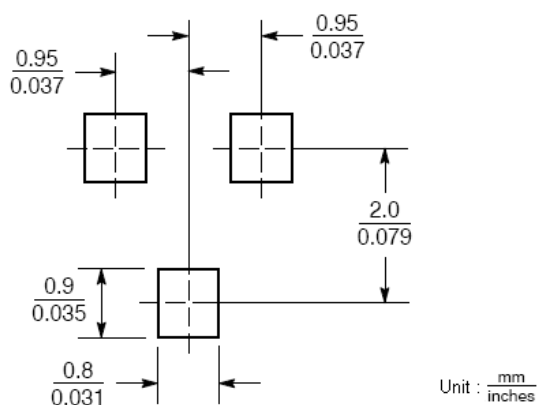
Transient Thermal Response Curves



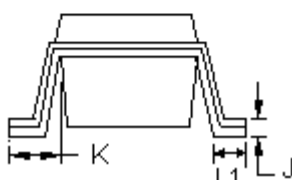
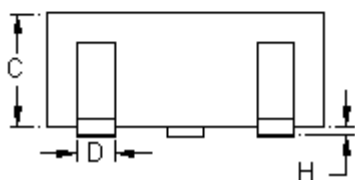
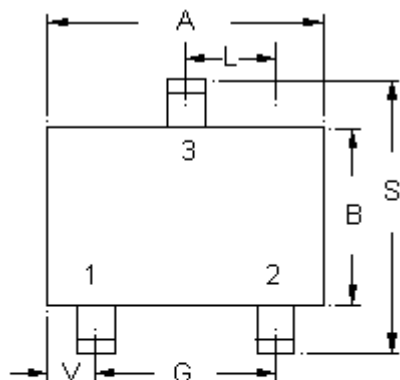
Typical Characteristics(Cont.)



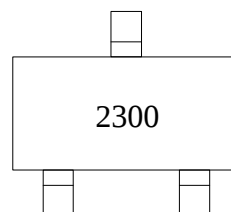
Recommended Soldering Footprint



SOT-23 Dimension



Marking:



Style: Pin 1.Gate 2.Source 3.Drain

3-Lead SOT-23 Plastic
 Surface Mounted Package
 Code: N3

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0032	0.0079	0.08	0.20
B	0.0472	0.0669	1.20	1.70	K	0.0118	0.0266	0.30	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1161	2.10	2.95
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10	L1	0.0118	0.0197	0.30	0.50