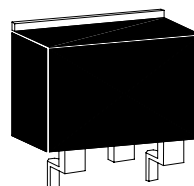


N-Channel Enhancement Mode Power MOSFET

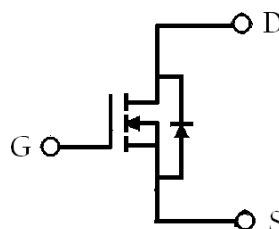
Features:

- Low Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic
- RoHS compliant package

TO-263



G D S



G : Gate D : Drain S : Source

BV_{DSS}	500V
$I_D @ V_{GS}=10V, T_C=25^{\circ}C$	8.5A
$I_D @ V_{GS}=10V, T_C=100^{\circ}C$	5.4A
$R_{DS(on)(TYP)} @ V_{GS}=10V, I_D=4.5A$	0.71Ω

Ordering Information

Device	Package	Shipping
KUN9N50B	TO-263 (Pb-free lead plating and RoHS compliant package)	800 pcs / Tape & Reel

Absolute Maximum Ratings (T_c=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage (Note 1)	V _{DS}	500	V
Gate-Source Voltage	V _{GS}	±30	
Continuous Drain Current @T _c =25°C, V _{GS} =10V	I _D	8.5*	A
Continuous Drain Current @T _c =100°C, V _{GS} =10V		5.4*	
Pulsed Drain Current @ V _{GS} =10V (Note 2)	I _{DM}	34*	
Single Pulse Avalanche Energy (Note 3)	E _{AS}	290	mJ
Avalanche Current (Note 2)	I _{AS}	8	A
Repetitive Avalanche Energy (Note 2)	E _{AR}	12.5	mJ
Maximum Temperature for Soldering @ Lead at 0.125 in(3.175mm) from case for 10 seconds	T _L	300	°C
Total Power Dissipation (T _c =25°C)	P _D	134	W
Linear Derating Factor above 25°C		1.07	W/°C
Operating Junction and Storage Temperature	T _j , T _{stg}	-55~+150	°C

*Drain current limited by maximum junction temperature

Note : 1. T_J=+25°C to +150°C.

2. Repetitive rating; pulse width limited by maximum junction temperature.

3. I_{AS}=8A, V_{DD}=50V, L=5mH, R_G=25Ω, starting T_J=+25°C. 100% tested by conditions of I_{AS}=5.4A, L=5mH, V_{GS}=10V, V_{DD}=50V

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{θJC}	0.93	°C/W
Thermal Resistance, Junction-to-ambient, max	R _{θJA}	62.5	

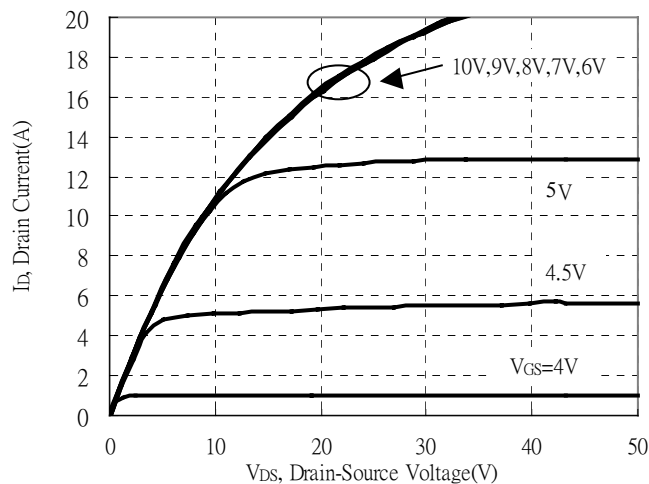
Characteristics (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	500	-	-	V	V _{GS} =0V, I _D =250μA
ΔBV _{DSS} /ΔT _j	-	0.6	-	V/°C	Reference to 25°C, I _D =250μA
V _{GS(th)}	2.0	-	4.0	V	V _{DS} = V _{GS} , I _D =250μA
*G _{FS}	-	8	-	S	V _{DS} =15V, I _D =4A
I _{GSS}	-	-	±100	nA	V _{GS} =±30V, V _{DS} =0V
I _{DSS}	-	-	1	μA	V _{DS} =500V, V _{GS} =0V
	-	-	25		V _{DS} =400V, V _{GS} =0V, T _j =125°C
*R _{DS(ON)}	-	0.71	0.9	Ω	V _{GS} =10V, I _D =4.5A
Dynamic					
*Q _g	-	26.4	-	nC	I _D =4.5A, V _{DD} =250V, V _{GS} =10V
*Q _{gs}	-	4.8	-		
*Q _{gd}	-	9.9	-		
*t _{d(ON)}	-	14	-	ns	V _{DD} =250V, I _D =4.5A, V _{GS} =10V, R _G =1 Ω
*tr	-	8.8	-		
*t _{d(OFF)}	-	42.6	-		
*tf	-	7.8	-		
C _{iss}	-	975	-	pF	V _{GS} =0V, V _{DS} =25V, f=1MHz
C _{oss}	-	108	-		
Cr _{ss}	-	76	-		
Source-Drain Diode					
*I _S	-	-	8	A	
*I _{SM}	-	-	32		
*V _{SD}	-	0.8	1.2	V	I _S =4.5A, V _{GS} =0V
*trr	-	242	-	ns	V _{GS} =0V, I _F =4.5, dI _F /dt=100A/μs
*Q _{rr}	-	1.5	-	μC	

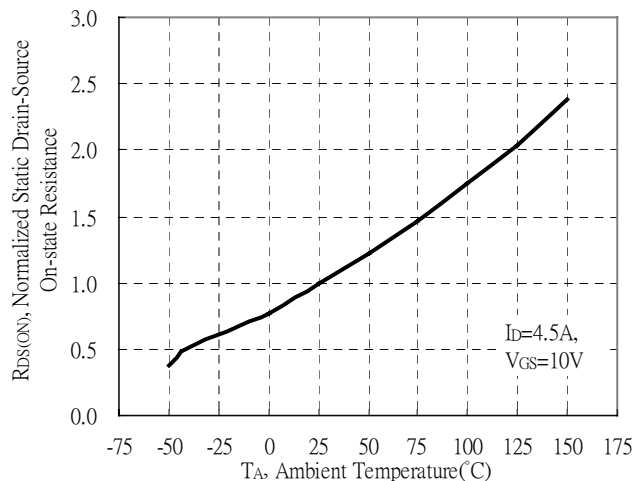
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

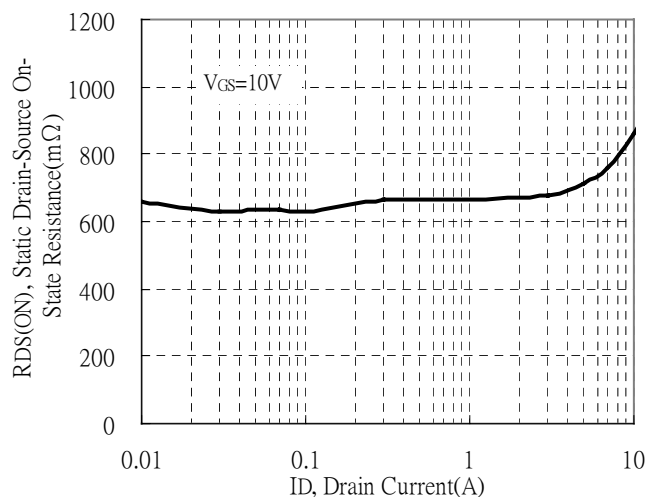
Typical Output Characteristics



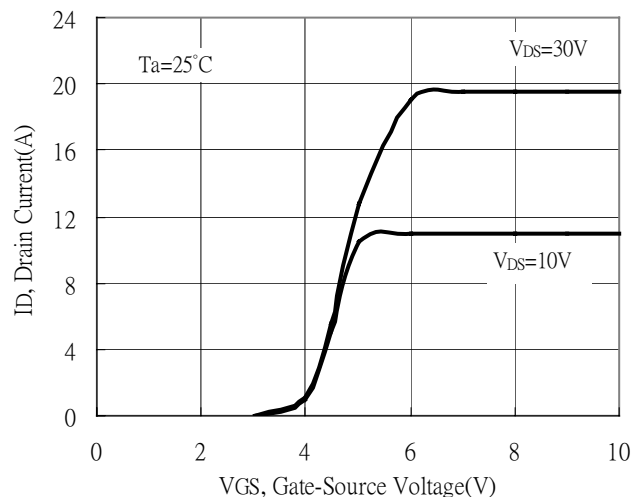
Static Drain-Source On-resistance vs Ambient Temperature



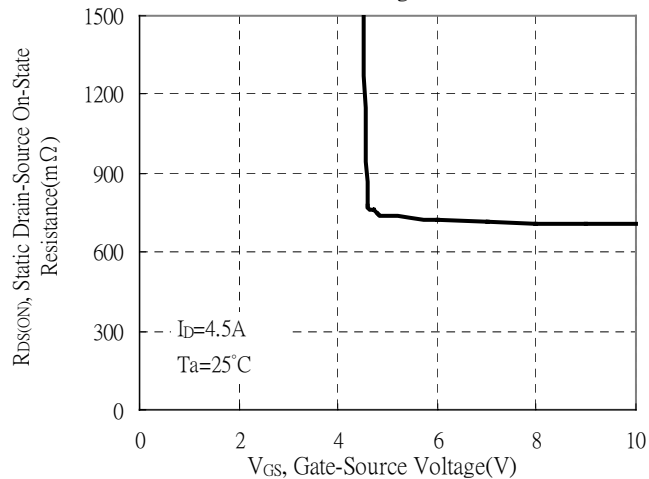
Static Drain-Source On-State resistance vs Drain Current



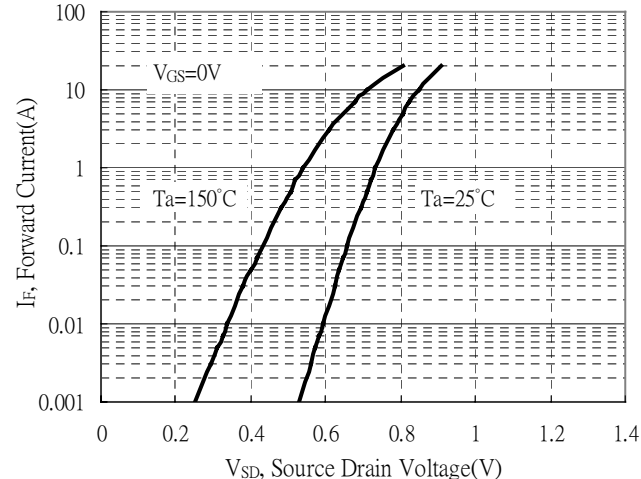
Drain Current vs Gate-Source Voltage



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

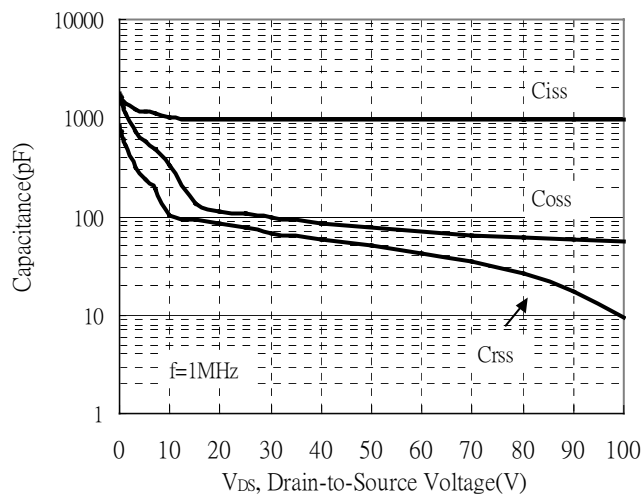


Forward Drain Current vs Source-Drain Voltage

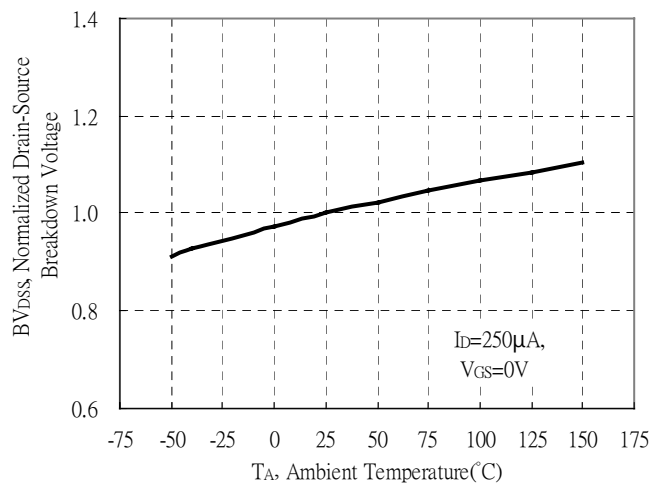


Typical Characteristics(Cont.)

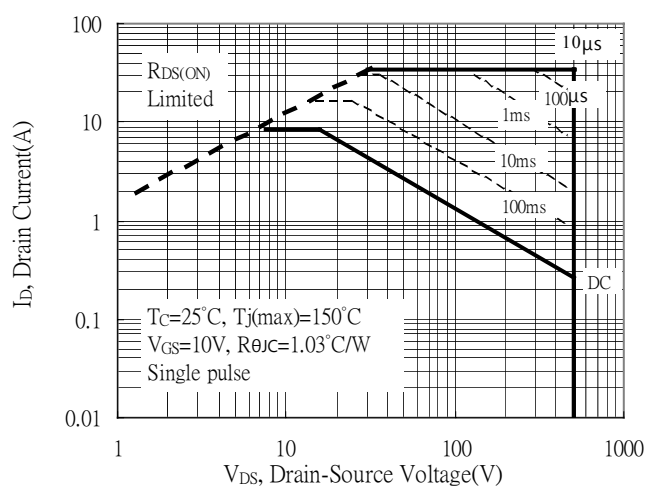
Capacitance vs Reverse Voltage



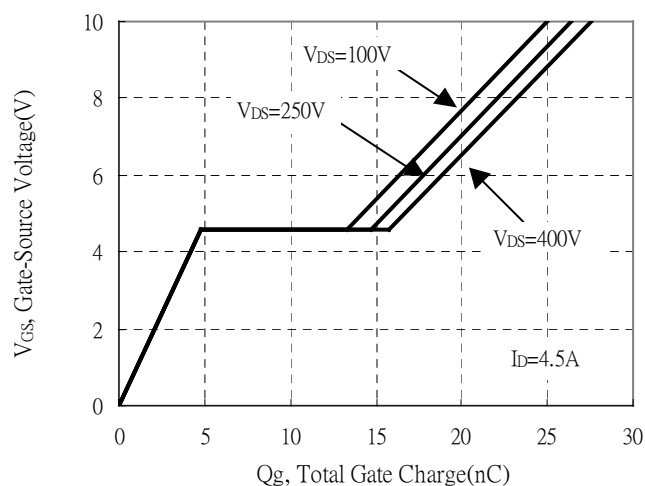
Breakdown Voltage vs Ambient Temperature



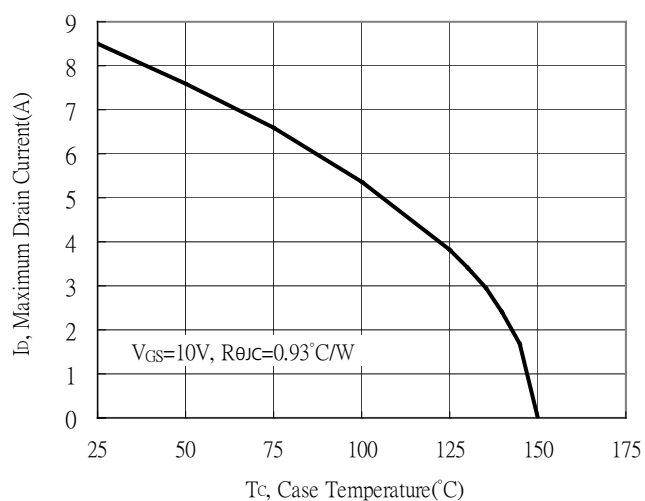
Maximum Safe Operating Area



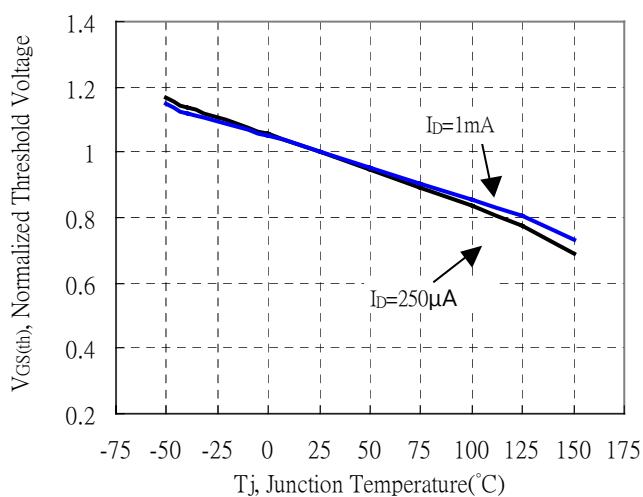
Gate Charge Characteristics



Maximum Drain Current vs Case Temperature

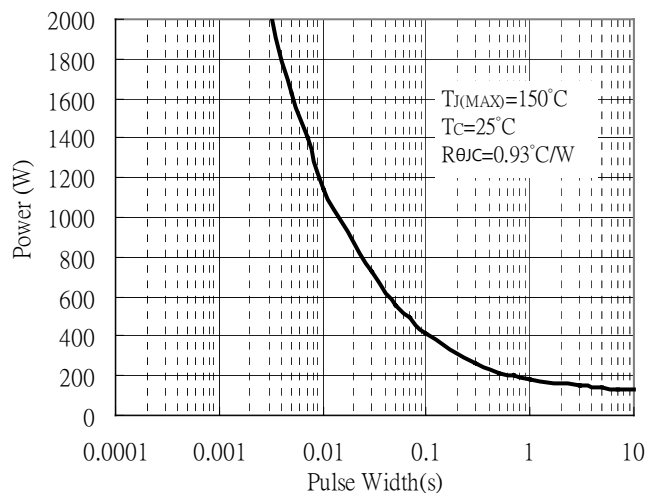


Threshold Voltage vs Junction Temperature

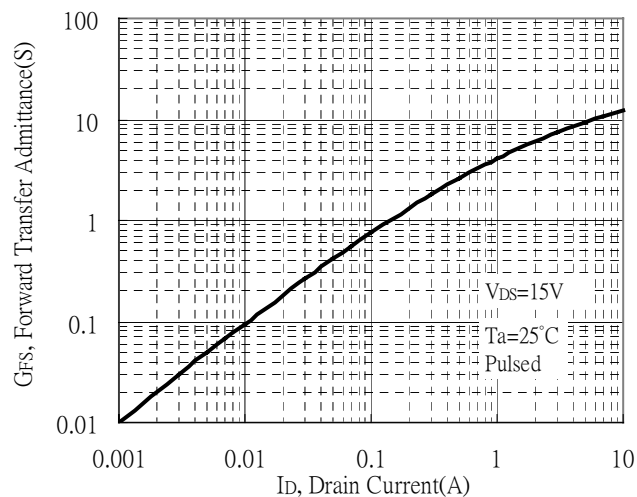


Typical Characteristics(Cont.)

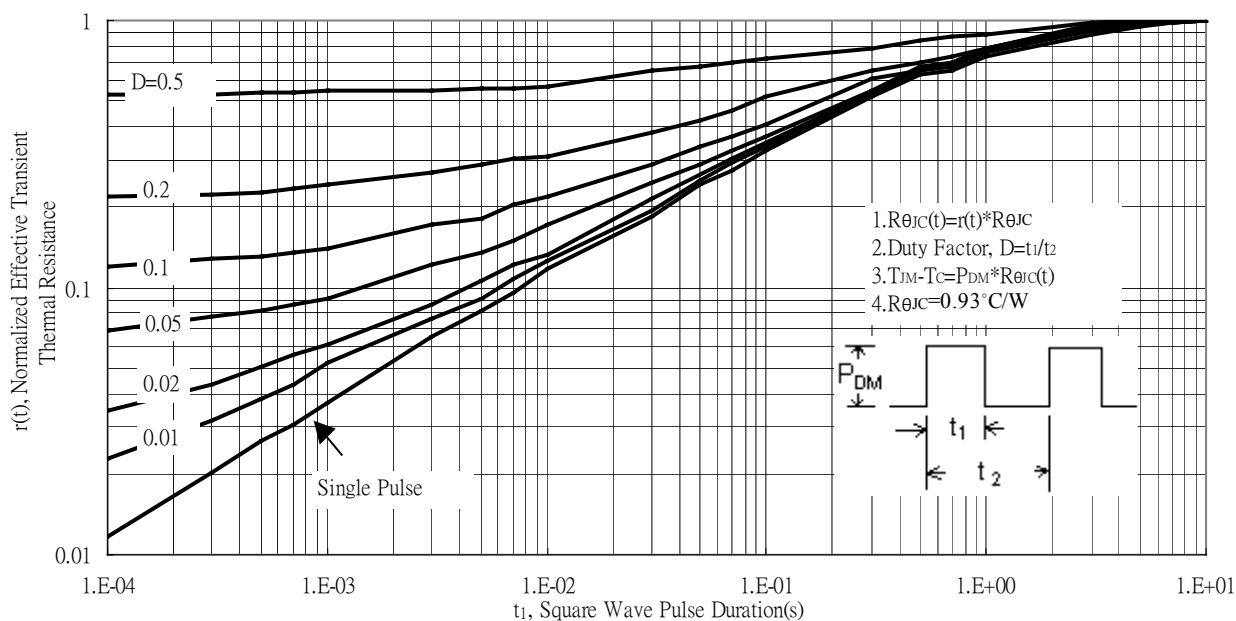
Single Pulse Power Rating, Junction to Case



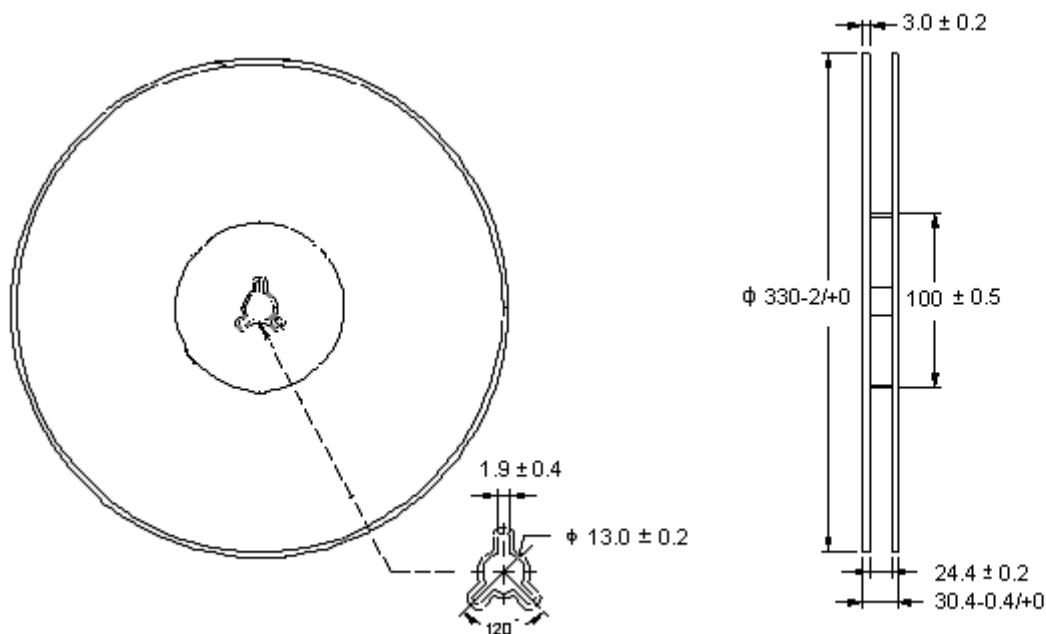
Forward Transfer Admittance vs Drain Current



Transient Thermal Response Curves

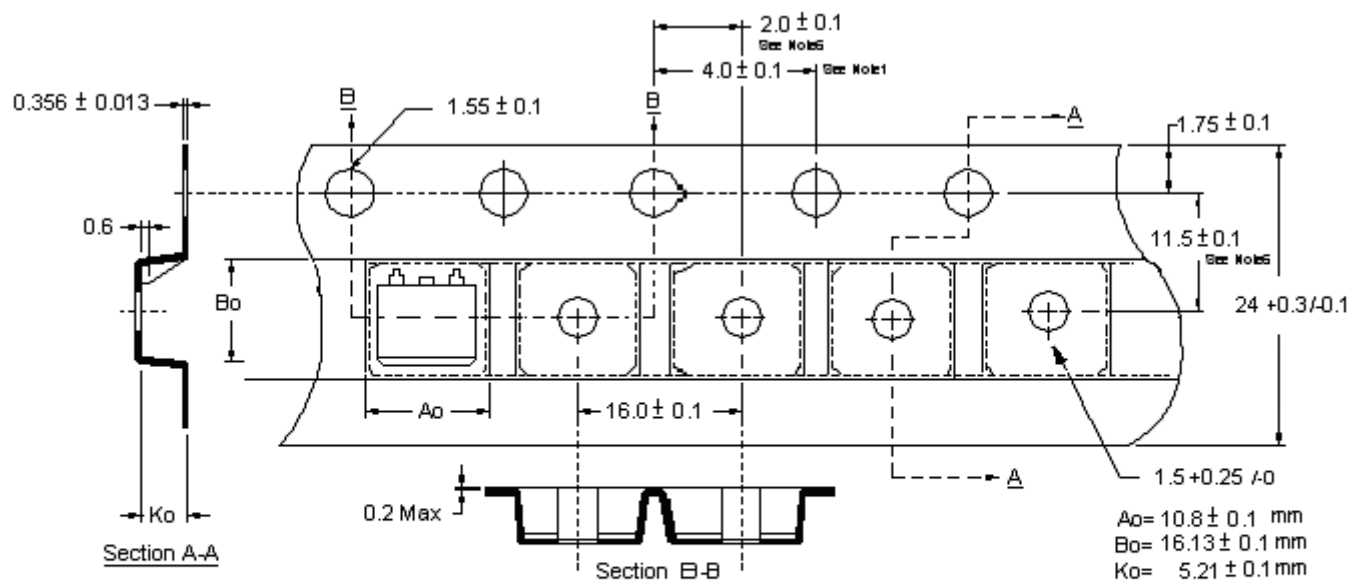


Reel Dimension

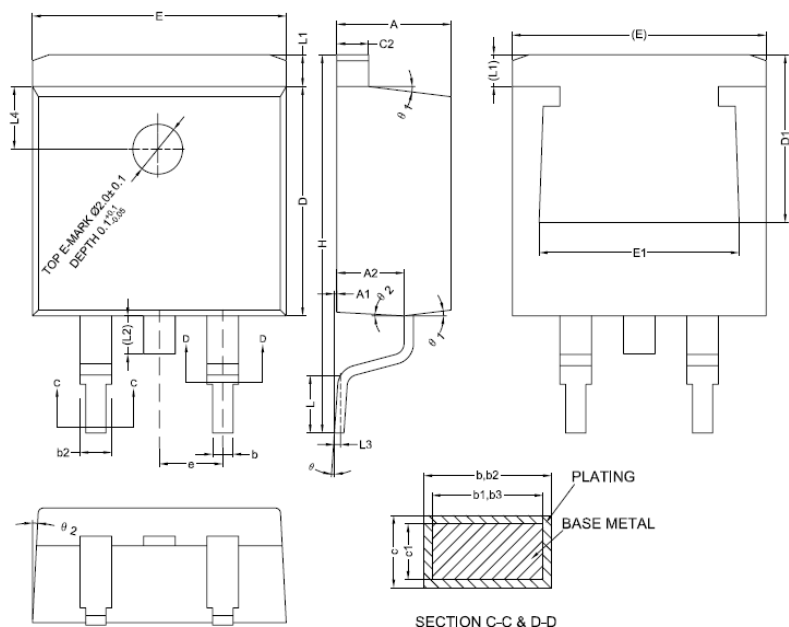


Unit: millimeter

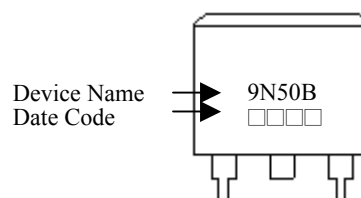
Carrier Tape Dimension



TO-263 Dimension



Marking :



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

3-Lead Plastic Surface Mounted Package

Date Code : (From left to right)

First Code : Year code, the last digit of Christnr year. For example, 2014→4, 2015→, 2016→6, ..., etc.

Second Code : Month code, Jan→A, Feb→B, Mar→C, Apr→D, May→E, Jun→F, Jul→G, Aug→H, Sep→J,
Oct→K, Nov→L, Dec→M

Third and fourth codes : production serial number, 01~99

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	4.40	4.70	0.173	0.185	E	10.06	10.26	0.396	0.404
A1	0.00	0.25	0.000	0.010	E1	7.80	8.20	0.307	0.323
A2	2.59	2.79	0.102	0.110	e	2.54 BSC		0.100 BSC	
b	0.77	0.90	0.030	0.035	H	14.70	15.50	0.579	0.610
b1	0.76	0.86	0.030	0.034	L	2.00	2.60	0.079	0.102
b2	1.23	1.36	0.048	0.054	L1	1.17	1.40	0.046	0.055
b3	1.22	1.32	0.048	0.052	L2	-	1.75	-	0.069
c	0.34	0.47	0.013	0.019	L3	0.25 BSC		0.010 BSC	
c1	0.33	0.43	0.013	0.017	L4	2.00 REF		0.079 BSC	
c2	1.22	1.32	0.048	0.052	θ	0°	8°	0°	8°
D	9.05	9.25	0.356	0.364	θ1	5°	9°	5°	9°
D1	6.60	-	0.260	-	θ2	1°	5°	1°	5°