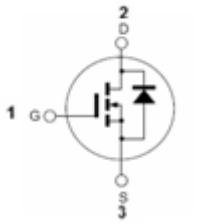
N-Channel Enhancement Mode Field Effect Transistor

BL5N50

FEATURES

- Low on-resistance.
- Low leakage current.
- High speed switching.
- Low gate charge.
- Avalanche ratings.



TO-220AB

MAXIMUM RATING operating temperature range applies unless otherwise specified

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	500	V
V_{GS}	Gate -Source Voltage	±30	V
I_D	Drain Current	5	A
$I_{D(pulse)}$	Drain Current(pulsed) Note1	20	A
I_{DR}	Body-drain diode reverse drain current	5	A
$I_{DR(pulse)}$	Body-drain diode reverse drain peak current(pulsed) Note1	20	A
I_{AP}	Avalanche current Note3	5	A
Pch	Channel dissipation Note2	30	W
$R_{\theta JA}$	Channel to case Thermal Impedance	4.17	℃/W
Tch	Channel temperature	150	℃
T_{stg}	StorageTemperature Range	-55 to +150	℃

Note: 1.PW ≤10us, duty cycle ≤ 1 %

2. Value at Tc = 25°C

3. Tch ≤150°C

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ELECTRICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=10mA	500	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=500V, V_{GS}=0V	-	-	1	μA
Gate-body Leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±30V	-	-	±0.1	uA
Gate to source cutoff voltage	$V_{GS(off)}$	V_{DS}=10V, I_D=1mA	3	-	4	V
Static drain-Source On-resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=2.5A	-	1.1	1.5	Ω
Forward Transconductance	g_{fs}	V_{DS}=10V,I_D=2.5A	3	4.5	-	S
Input Capacitance	C_{ISS}	V_{DS}=25V,V_{GS}=0V f=1.0MHz	-	580	-	pF
Output Capacitance	C_{OSS}		-	70	-	pF
Reverse Transfer Capacitance	C_{RSS}		-	13	-	pF
Turn-On Delay Time	$t_{D(ON)}$	I_D=2.5A,R_G= 10Ω R_L= 100Ω,V_{GS}=10V	-	20	-	ns
Rise Time	t_R		-	15	-	ns
Turn-Off Delay Time	$t_{D(OFF)}$		-	65	-	ns
Fall Time	t_F		-	15	-	ns
Total Gate Charge	Q_g	V_{DD}=400V,V_{GS}=10V I_D=5A	-	15		nC
Gate-source Charge	Q_{gs}		-	3	-	nC
Gate-drain Charge	Q_{gd}		-	8	-	nC
Reverse Recovery Time	Trr	I_F=5A,V_{GS}=0V dIF/dt=100A/μs,	-	400	-	ns
Reverse Recovery Charge	Qrr		-	1.5	-	μC
Body–drain diode forward voltage	V_{DF}	I_F=5A,V_{GS}=0V		0.85	1.3	V

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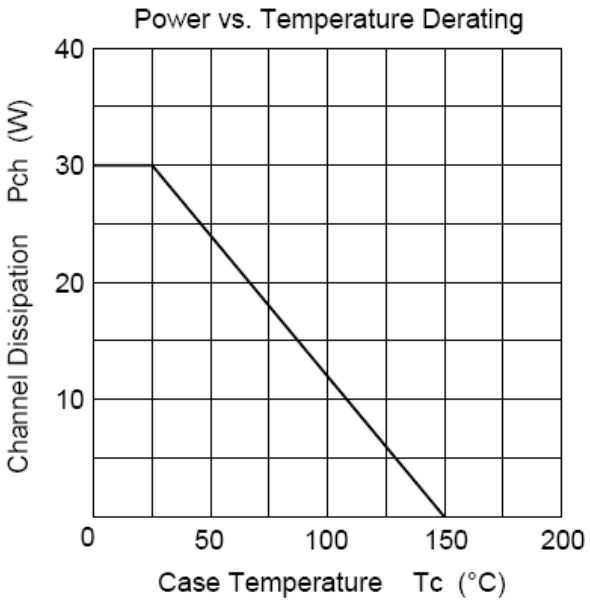
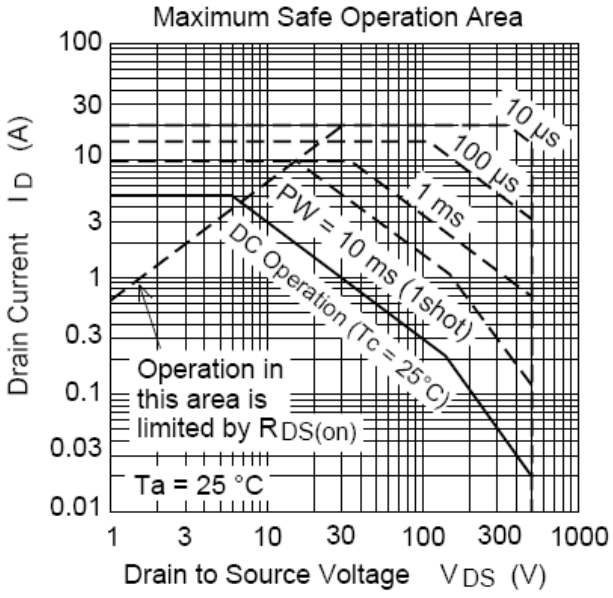
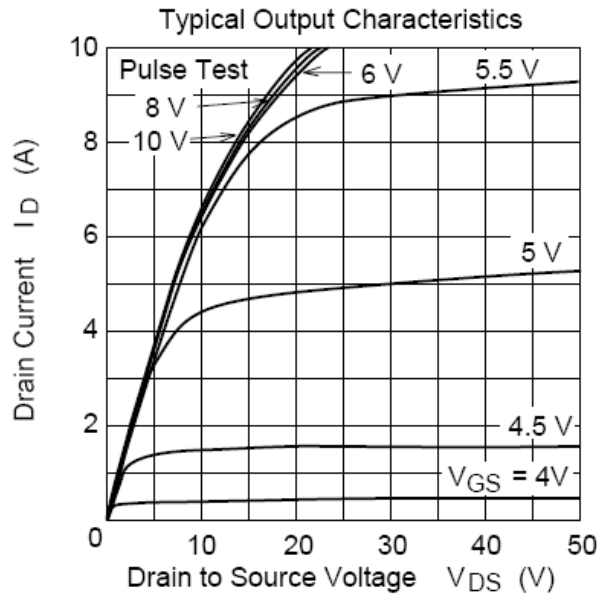
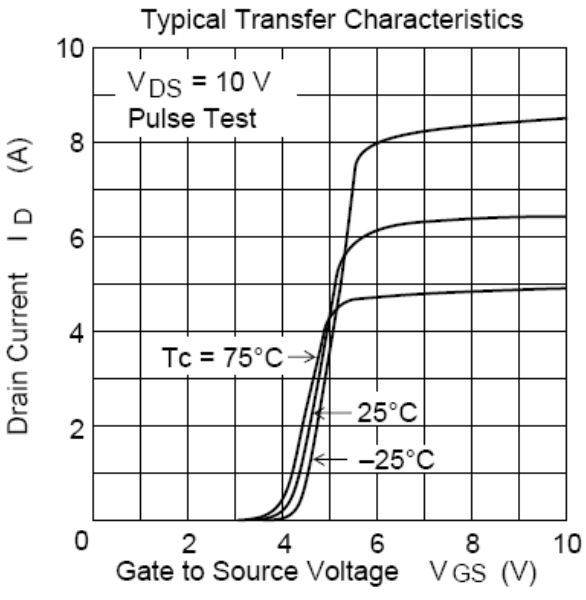
TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified









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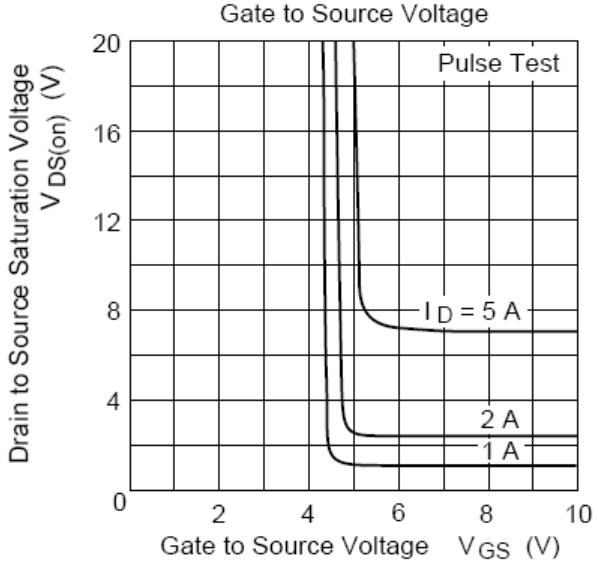
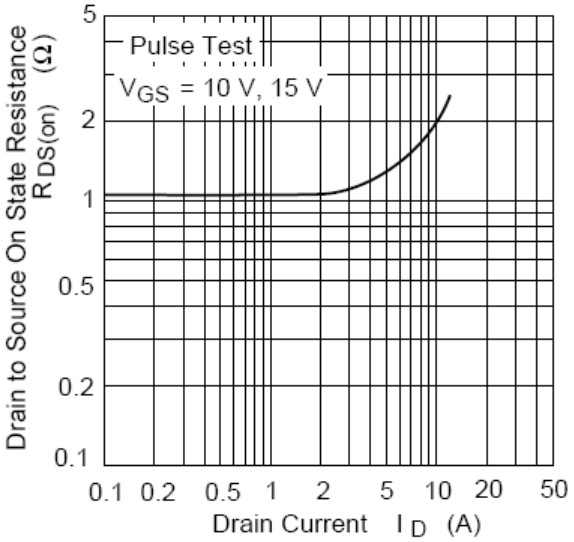
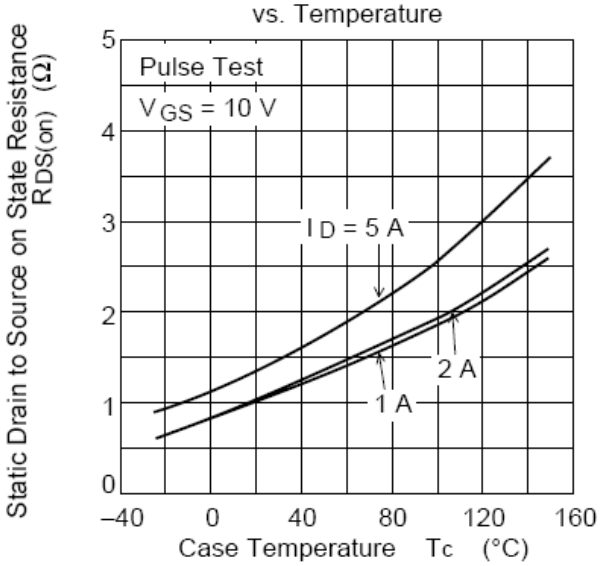
Drain to Source Saturation Voltage vs. Gate to Source Voltage



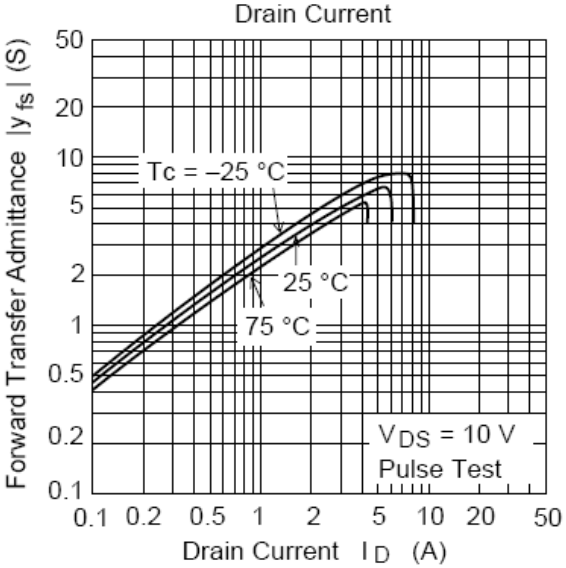
Static Drain to Source on State Resistance vs. Drain Current



Static Drain to Source on State Resistance vs. Temperature



Forward Transfer Admittance vs. Drain Current



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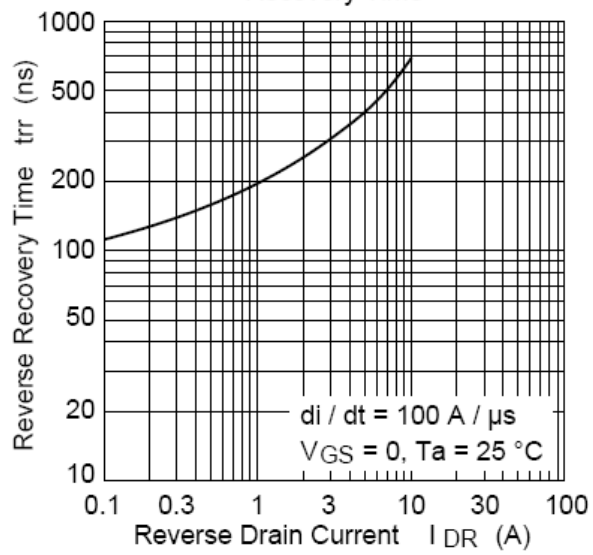
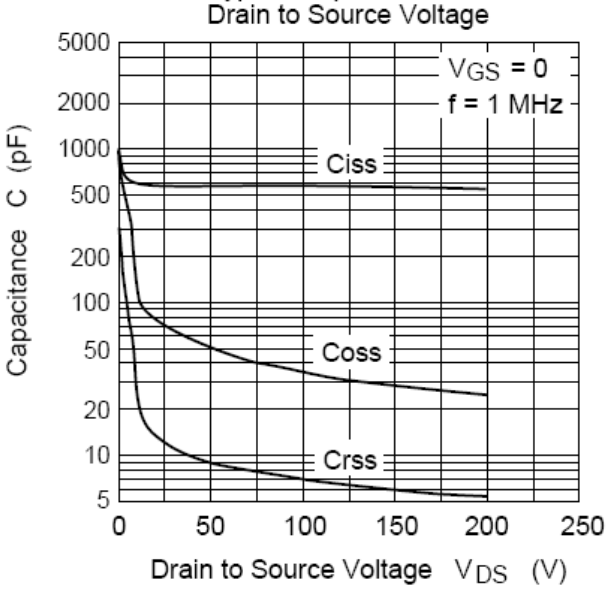
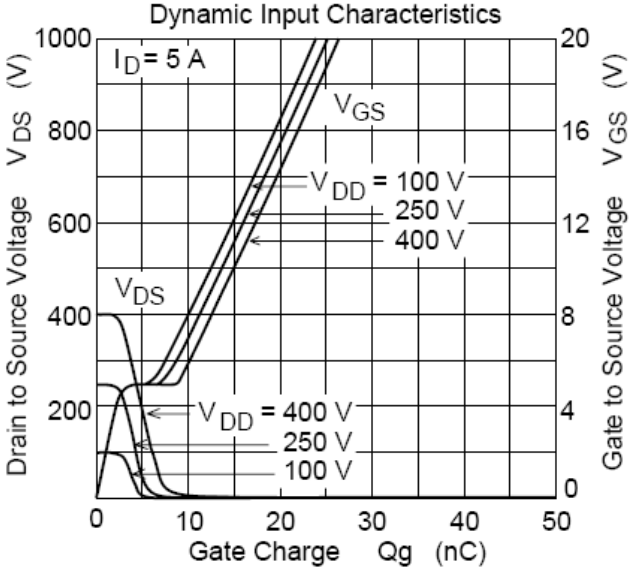
Body–Drain Diode Reverse Recovery Time



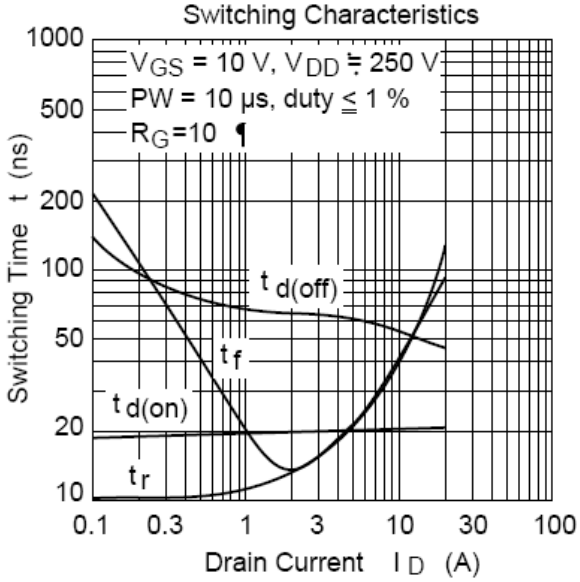
Typical Capacitance vs. Drain to Source Voltage



Dynamic Input Characteristics



Switching Characteristics



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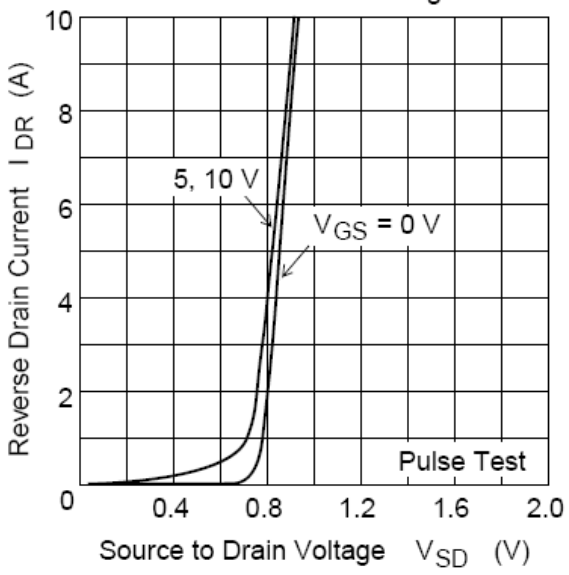
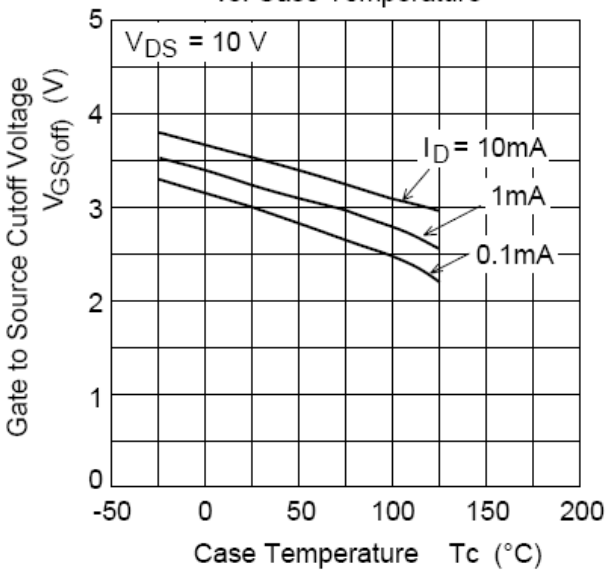
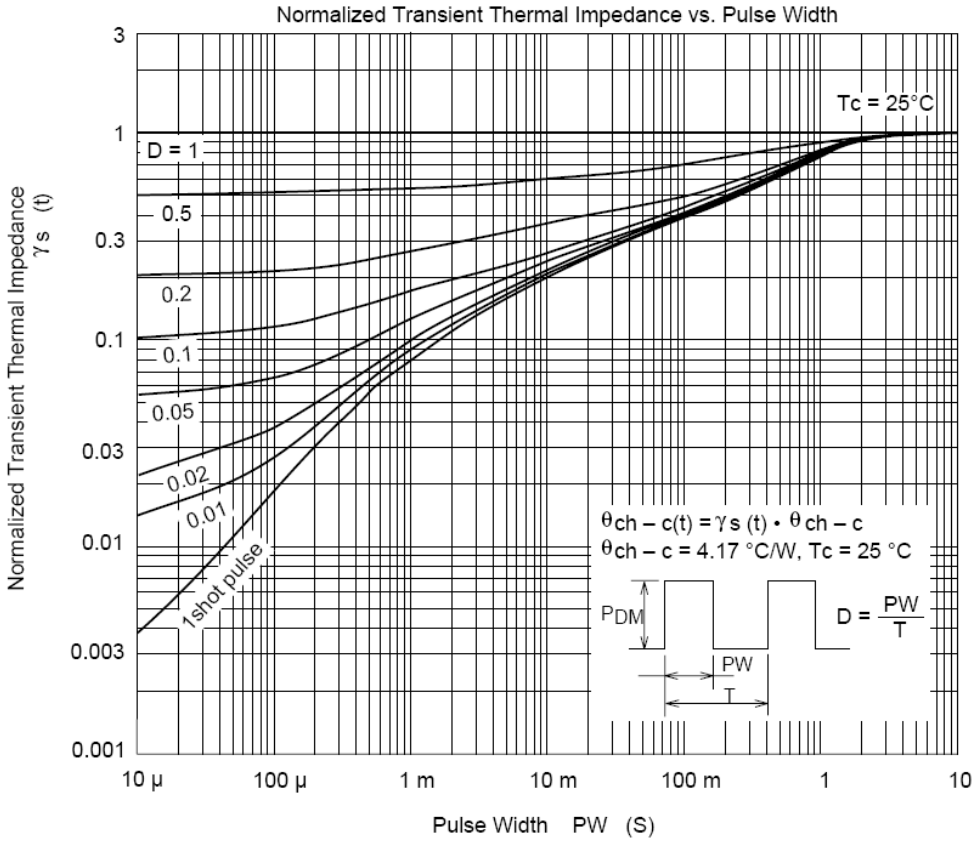
Reverse Drain Current vs.
Source to Drain Voltage



Gate to Source Cutoff Voltage
vs. Case Temperature



Normalized Transient Thermal Impedance vs. Pulse Width



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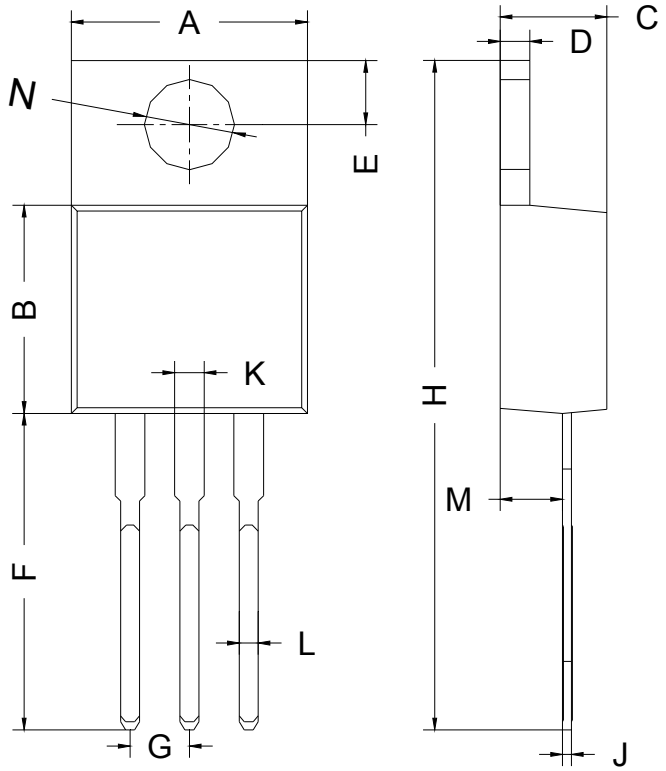
PACKAGE OUTLINE

Plastic surface mounted package TO-220AB



TO-220AB		
Dim	Min	Max
A	9.80	10.30
B	8.70	9.10
C	4.57 Typical	
D	1.27 Typical	
E	2.64	2.84
F	13.14	13.74
G	2.44	2.64
H	28.03	28.83
J	0.38 Typical	
K	1.22	1.32
L	0.71	0.91
M	2.50 Typical	
N	3.86 Typical	
All Dimensions in mm		