
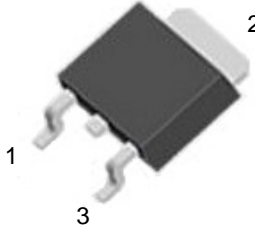
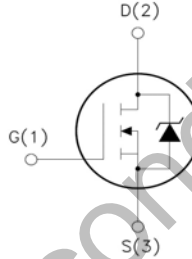
 <p style="font-size: 24pt; font-weight: bold; margin-top: 20px;">WGD15N10</p> <p>100V N-Channel MOSFET</p> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Low Intrinsic Capacitances.</li> <li><input type="checkbox"/> Excellent Switching Characteristics.</li> <li><input type="checkbox"/> Extended Safe Operating Area.</li> <li><input type="checkbox"/> Unrivalled Gate Charge :Qg= 12.5nC (Typ.).</li> <li><input type="checkbox"/> BVDSS=100V, I<sub>D</sub>= 15A</li> <li><input type="checkbox"/> R<sub>DS(on)</sub> : 0.11Ω (Max) @V<sub>G</sub>=10V</li> <li><input type="checkbox"/> 100% Avalanche Tested</li> </ul>	<p style="text-align: center;">TO-252</p>  <div style="text-align: center; margin-top: 20px;">  <p>1 2 3</p> </div> <div style="text-align: center; margin-top: 20px;">  <p>D(2) G(1) S(3)</p> </div> <div style="margin-top: 10px;"> <p>1. Gate (G)</p> <p>2. Drain (D)</p> <p>3. Source (S)</p> </div>
--	---

**Absolute Maximum Ratings\*** (T<sub>c</sub>=25°C Unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Drain Current-Continuous	I <sub>D</sub>	15	A
Drain Current-Continuous(T <sub>C</sub> =100°C)	I <sub>D</sub> (100°C)	6.5	A
Pulsed Drain Current	I <sub>DM</sub>	58	A
Maximum Power Dissipation	P <sub>D</sub>	30	W
Derating factor		0.24	W/°C
Single pulse avalanche energy (Note 5)	E <sub>AS</sub>	150	mJ
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 To 150	°C

**Thermal Characteristics**

Thermal Resistance, Junction-to-Case(Note 2)	R <sub>θJC</sub>	4.17	°C/W
--	------------------	------	------

**Electrical Characteristics ( $T_C=25^\circ\text{C}$  unless otherwise noted)**

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	110	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics (Note 3)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.8	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=5A$	-	95	110	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=25V, I_D=6A$	3.5	-	-	S
<b>Dynamic Characteristics (Note4)</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V,$ $F=1.0\text{MHz}$	-	690	-	PF
Output Capacitance	$C_{oss}$		-	120	-	PF
Reverse Transfer Capacitance	$C_{rss}$		-	90	-	PF
<b>Switching Characteristics (Note 4)</b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=2A, R_L=15\Omega$ $V_{GS}=10V, R_G=2.5\Omega$	-	11	-	nS
Turn-on Rise Time	$t_r$		-	7.4	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	35	-	nS
Turn-Off Fall Time	$t_f$		-	9.1	-	nS
Total Gate Charge	$Q_g$	$V_{DS}=30V, I_D=3A,$ $V_{GS}=10V$	-	15.5	-	nC
Gate-Source Charge	$Q_{gs}$		-	3.2	-	nC
Gate-Drain Charge	$Q_{gd}$		-	4.7	-	nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage (Note 3)	$V_{SD}$	$V_{GS}=0V, I_S=9A$	-	-	1.2	V
Diode Forward Current (Note 2)	$I_S$		-	-	15	A
Reverse Recovery Time	$t_{rr}$	$T_J = 25^\circ\text{C}, I_F = 6A$	-	21		nS
Reverse Recovery Charge	$Q_{rr}$	$di/dt = 100A/\mu s$ (Note3)	-	97		nC
Forward Turn-On Time	$t_{on}$	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

**Notes:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300 \mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production
5. EAS condition :  $T_J=25^\circ\text{C}, V_{DD}=50V, V_G=10V, L=0.5\text{mH}, R_g=25\Omega$

Typical Characteristics

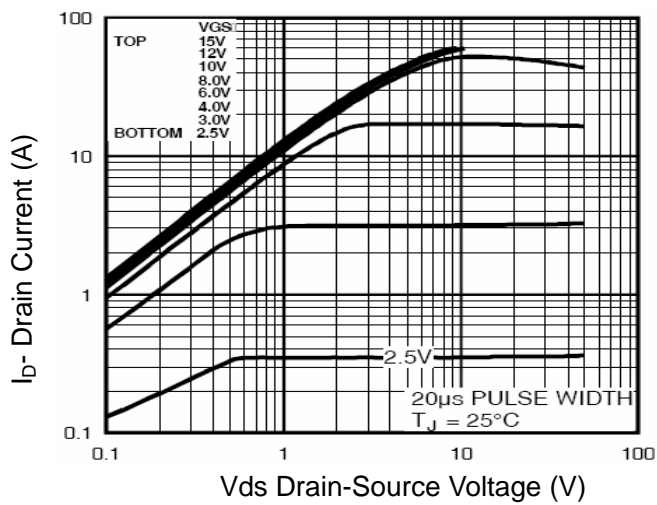


Figure 1 Output Characteristics

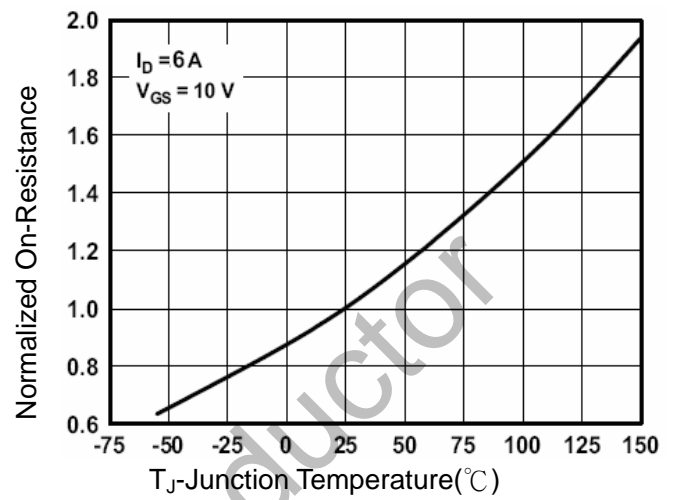


Figure 4 Rdson-Junction Temperature

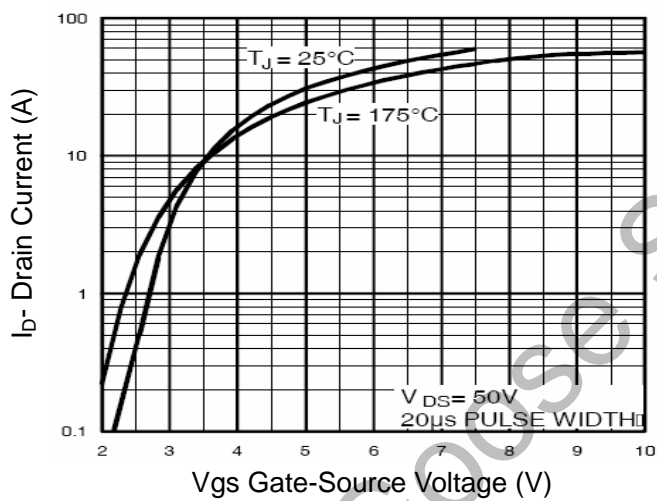


Figure 2 Transfer Characteristics

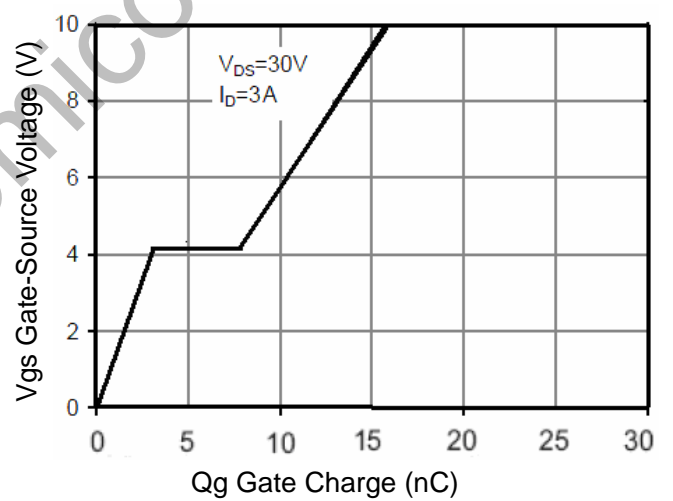


Figure 5 Gate Charge

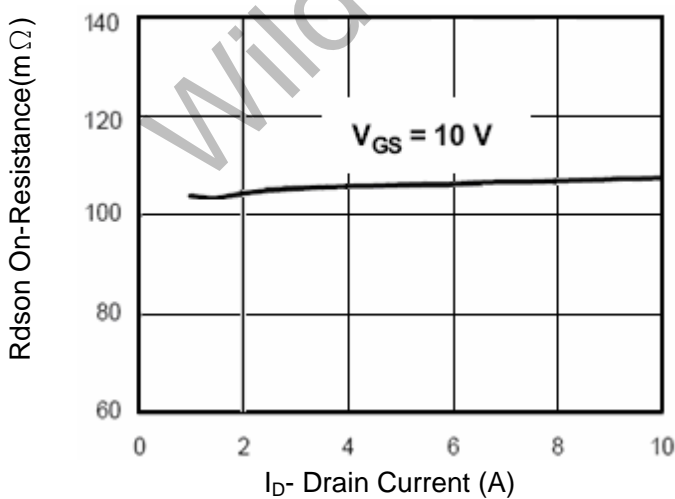


Figure 3 Rdson- Drain Current

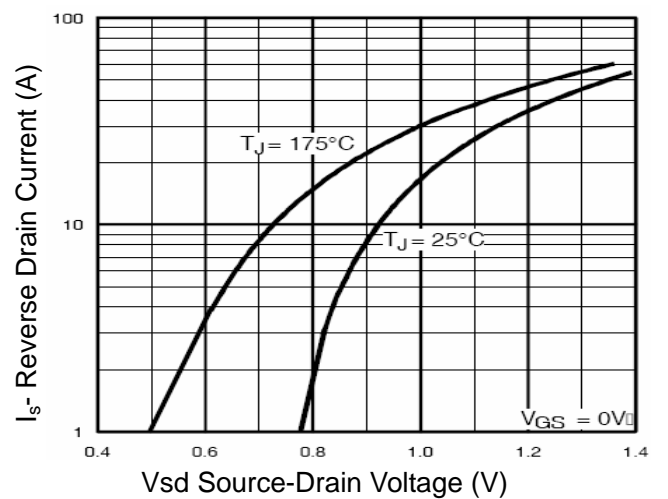


Figure 6 Source- Drain Diode Forward

Typical Characteristics (Continued)

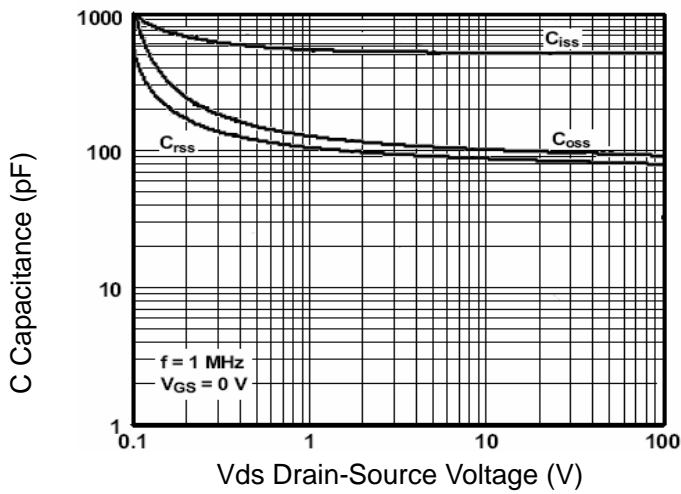


Figure 7 Capacitance vs Vds

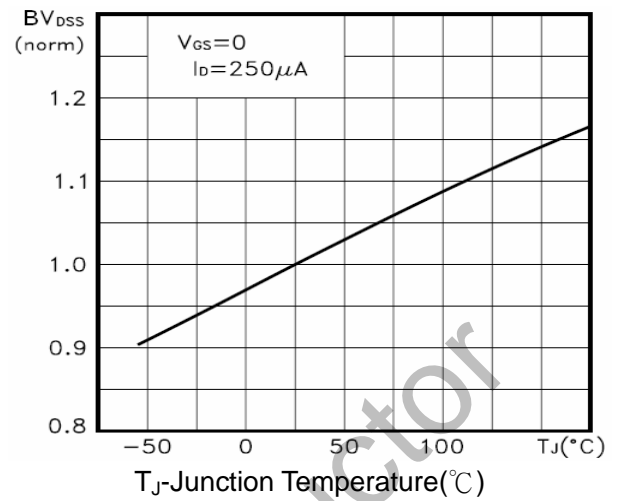


Figure 9  $BV_{DSS}$  vs Junction Temperature

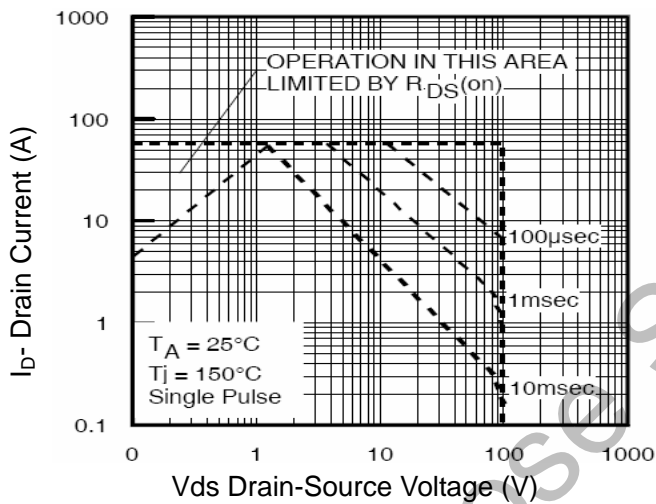


Figure 8 Safe Operation Area

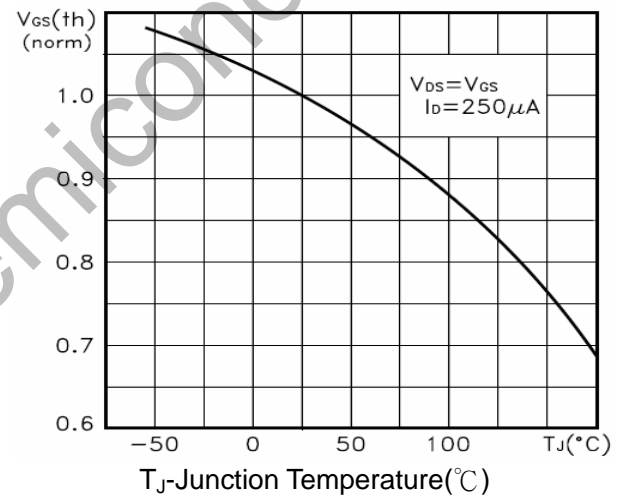


Figure 10  $V_{GS(th)}$  vs Junction Temperature

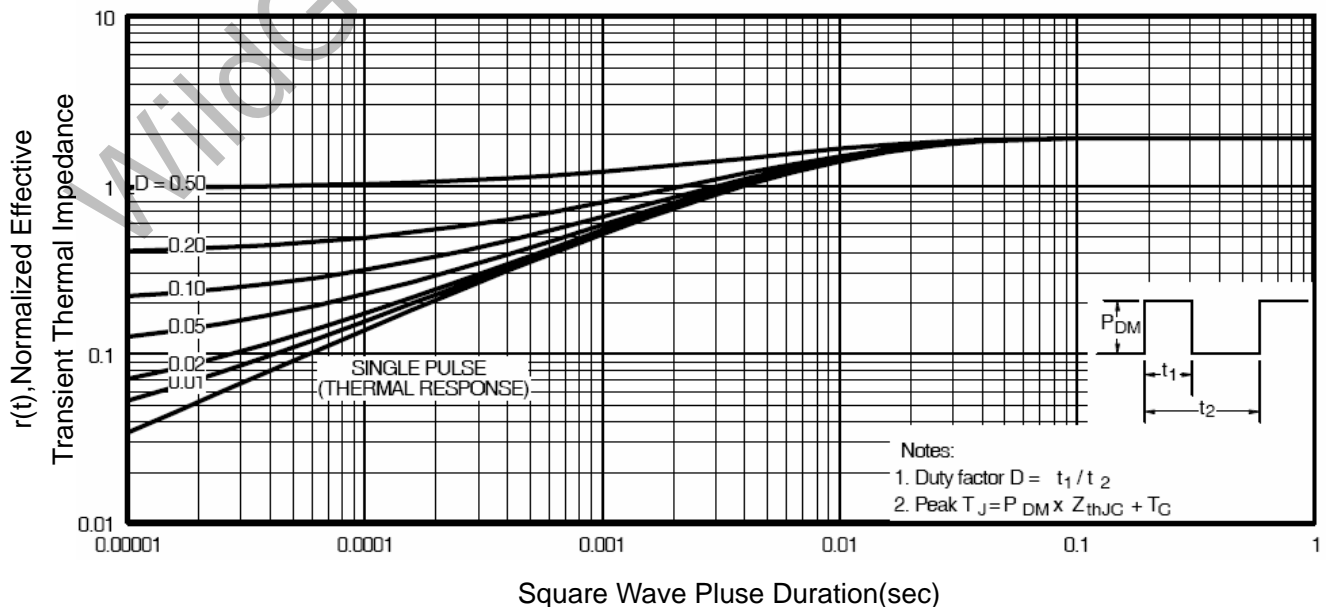
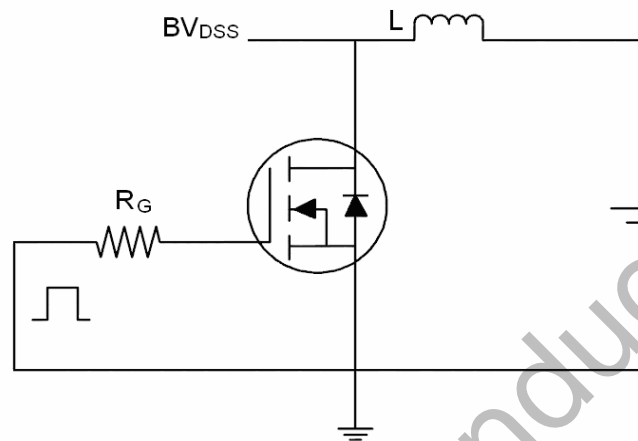


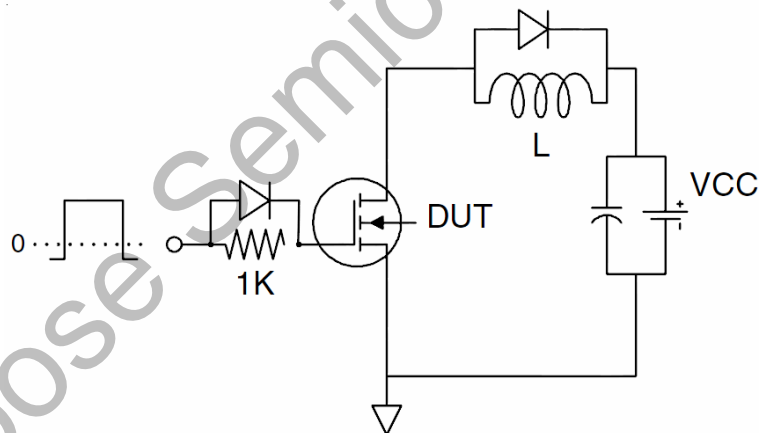
Figure 11 Normalized Maximum Transient Thermal Impedance

**Test Circuit**

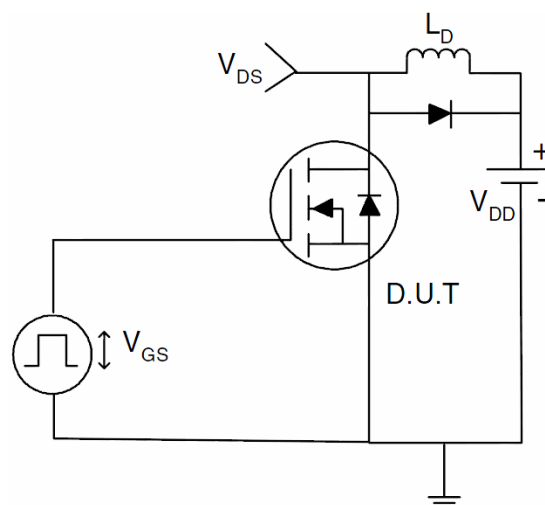
**1)  $E_{AS}$  test Circuit**



**2) Gate charge test Circuit**



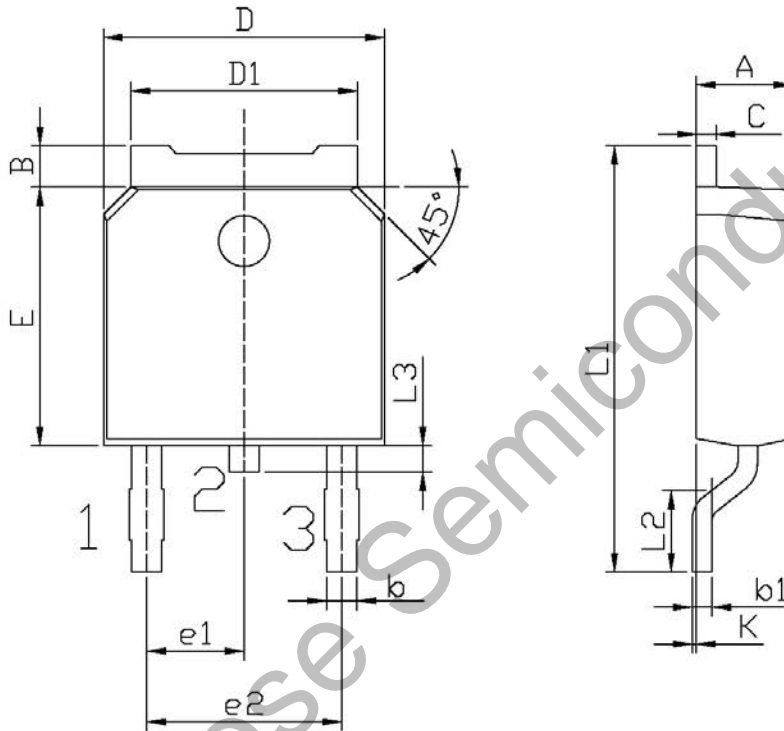
**3) Switch Time Test Circuit**



**Package Dimension**

TO-252

Unit: mm



单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.20	5.40	K	0.00	0.10