

100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	80A
V_{DSS}	100V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$< 6.4m\Omega$ (Typ: 5.3mΩ)

Features

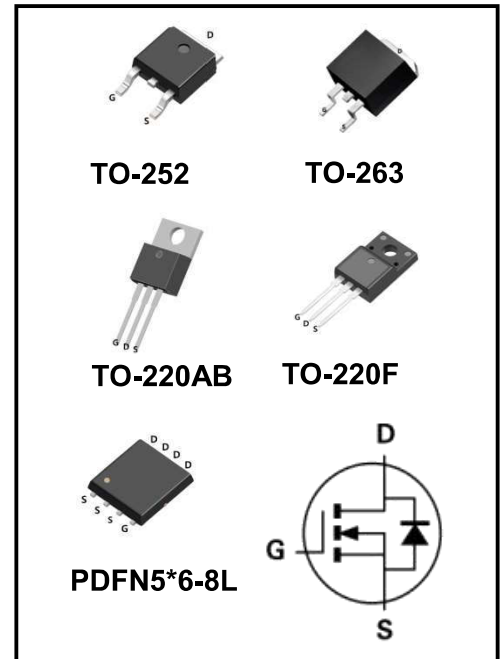
- ♦ Best-in-Class FOM
- ♦ Low Gate Charge
- ♦ High Current Capability
- ♦ **YFW-SGT technology**

Application

- ♦ Power Management in Telecom., Industrial Automation
- ♦ Motor Driving in Power Tool, E-vehicle, Robotics
- ♦ Current Switching in DC/DC&AC/DC(SR) Sub-system

MECHANICAL DATA

- ♦ Case: Molded plastic
- ♦ Mounting Position: Any
- ♦ Molded Plastic: UL Flammability Classification Rating 94V-0
- ♦ Lead free in compliance with EU RoHS 2011/65/EU directive
- ♦ Solder bath temperature 275°C maximum, 10s per JESD 22-B106



Product Specification Classification

Part Number	Package	Marking	Pack
YFWG80N10AT	TO-220AB	YFW G80N10AT XXXXX	1000PCS/box
YFWG80N10AF	TO-220F	YFW G80N10AF XXXXX	1000PCS/box
YFWG80N10AS	TO-263	YFW G80N10AS XXXXX	800PCS/reel
YFWG80N10AD	TO-252	YFW G80N10AD XXXXX	2500PCS/reel
YFWG80N10NF	PDFN5*6-8L	YFW G80N10NF XXXXX	5000PCS/reel

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous drain current	I_D	80	A
Pulsed Drain Current (Note1)	I_{DM}	320	A
Power Dissipation	P_D	96	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	216	mJ
Operation and storage temperature	T_{STG}, T_J	-55 to +150	°C
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.7	°C/W
Thermal Resistance, Junction--Ambient	$R_{\theta JA}$	50	°C/W

Note1:Pulse test: 300 μ s pulse width, 2 % duty cycle

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	100	-	-	V
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	-	2.5	V
Drain-source on-state resistance	$V_{GS}=10V, I_D=20A$	$R_{DS(on)}$	-	5.3	6.4	m Ω
	$V_{GS}=4.5V, I_D=12A$		-	7.5	9.4	
Gate-Source Leakage Current	$V_{GS} = \pm 20 V, V_{DS} = 0 V$	I_{GSS}	-	-	± 100	nA
Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ $f=1MHz$	C_{iss}	-	2420	-	pF
Output Capacitance		C_{oss}	-	900	-	
Reverse Transfer Capacitance		C_{rss}	-	35	-	
Turn-on delay time(Note2)	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=3\Omega$ $I_D=20A$	$t_{d(on)}$	-	11.2	-	ns
Rise Time(Note2)		T_r	-	23	-	
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	38	-	
Fall Time(Note2)		t_f	-	15.3	-	
Total Gate Charge(Note2)	$I_D=20A$ $V_{DS}=50V$ $V_{GS}=10V$	Q_g	-	43	-	nC
Gate-Source Charge(Note2)		Q_{gs}	-	9.4	-	
Gate-Drain Charge(Note2)		Q_{gd}	-	10.3	-	
Maximun Body-Diode Continuous Current(Note2)		I_S	-	-	80	A
Drain-Source Diode Forward Voltage	$I_S=20A, V_{GS}=0 V, T_J=25^\circ C$	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	$T_J = 25^\circ C, I_F = 20A$ $di / dt = 100 A/\mu s$	t_{rr}	-	42	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	46	-	nC

Note2:Pulse test: 300 μ s pulse width, 2 % duty cycle

Ratings and Characteristic Curves

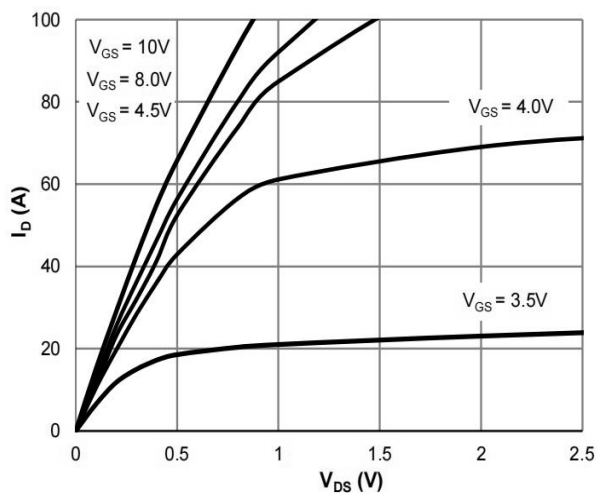


Figure 1: Saturation Characteristics

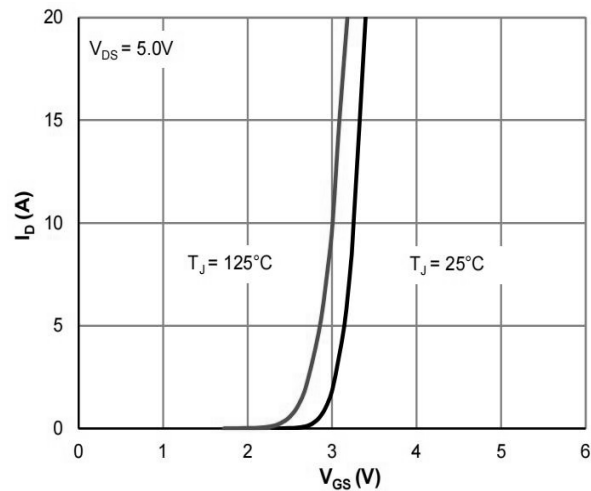


Figure 2: Transfer Characteristics

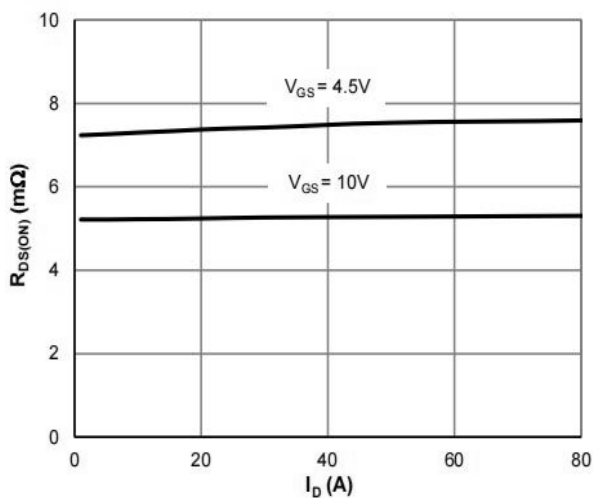


Figure 3: $R_{DS(ON)}$ vs. Drain Current

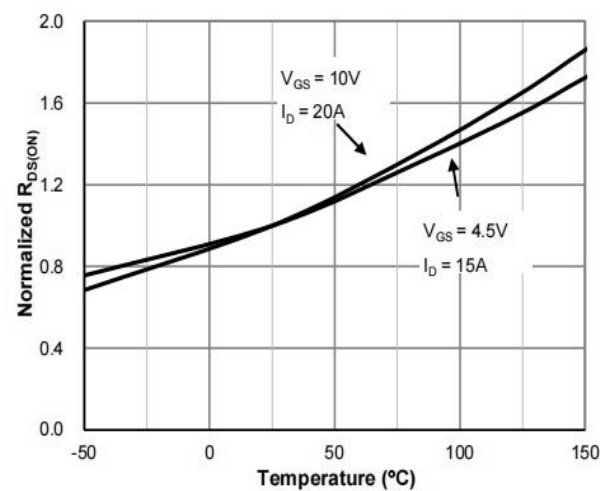


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

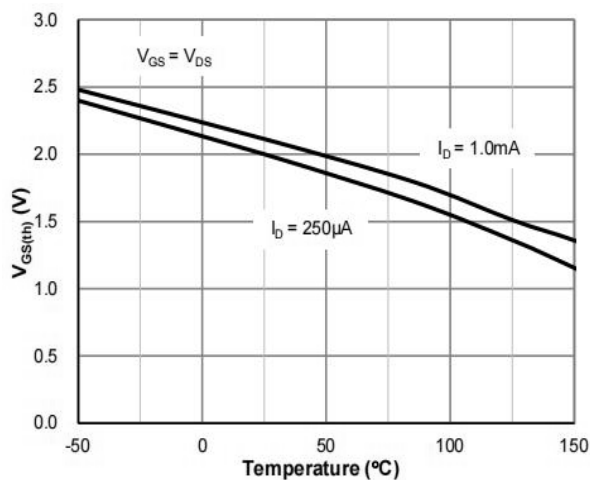


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

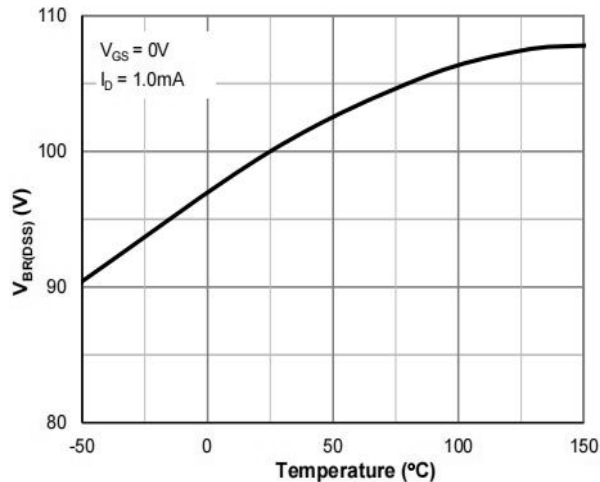


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

Ratings and Characteristic Curves

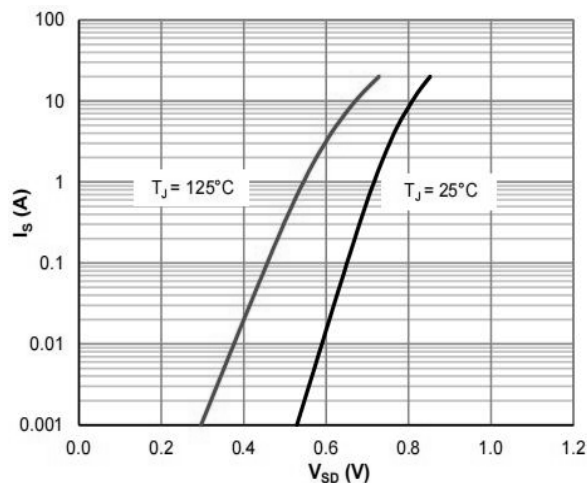


Figure 7: Body-Diode Characteristics

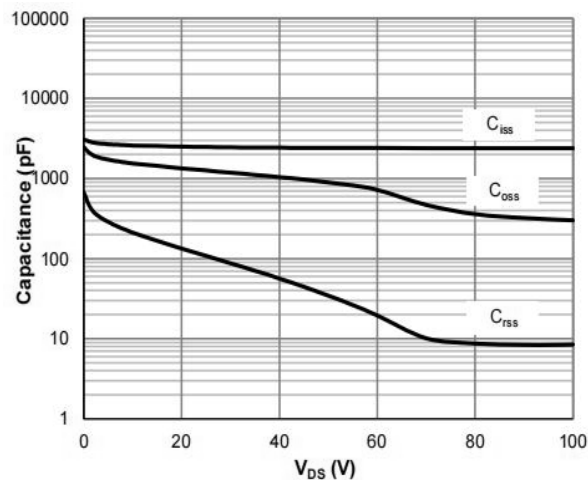


Figure 8: Capacitance Characteristics

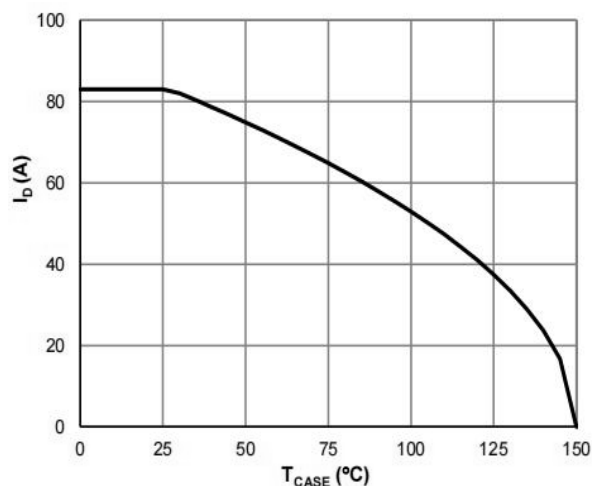


Figure 9: Current De-rating

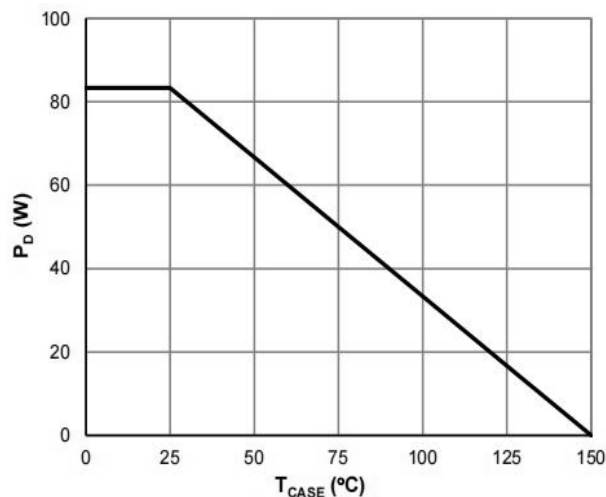


Figure 10: Power De-rating

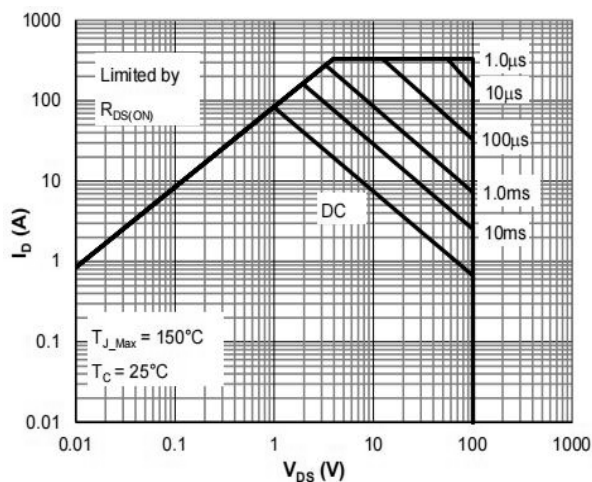


Figure 11: Maximum Safe Operating Area

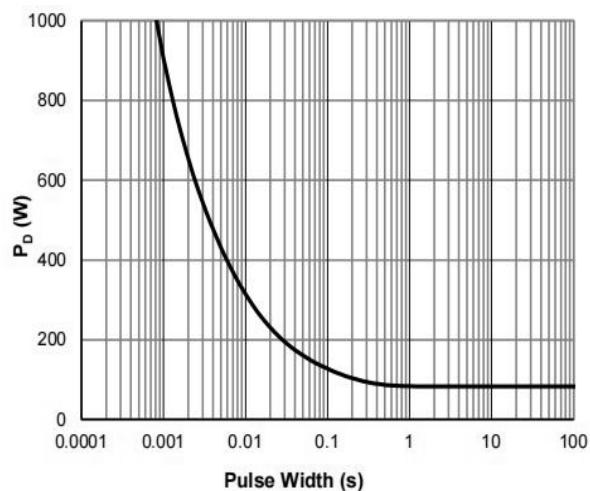
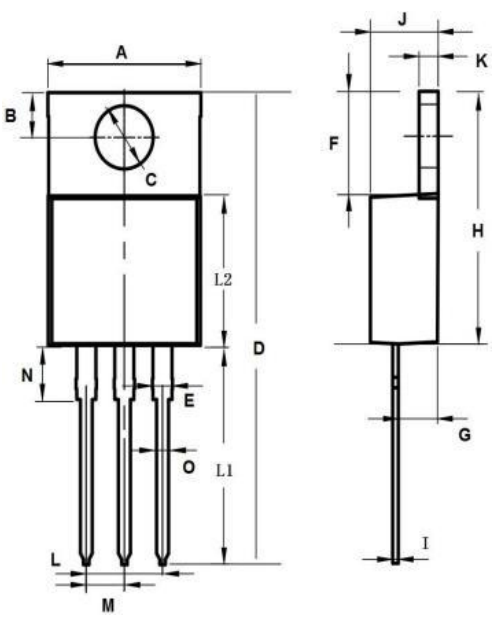


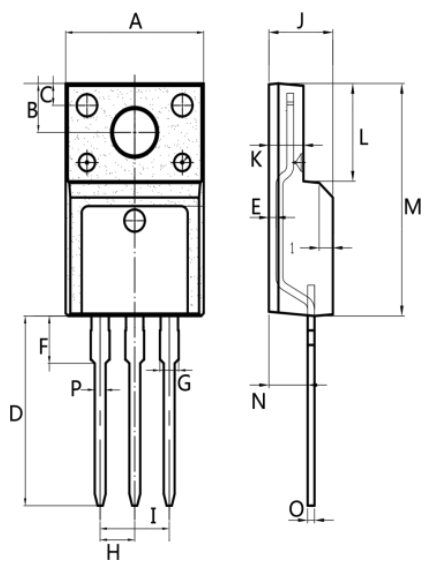
Figure 12: Single Pulse Power Rating, Junction-to-Case

Package Outline Dimensions Millimeters

TO-220AB

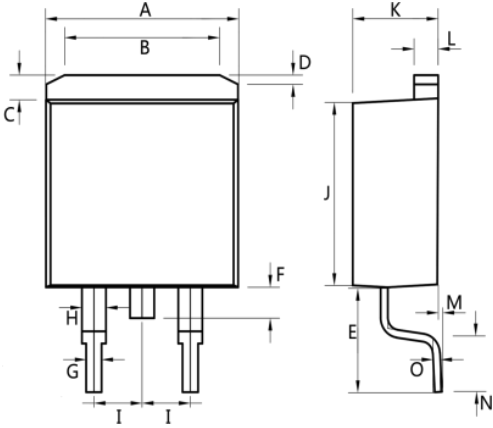
	Dim.	Min.	Max.
	A	10.15	10.35
	B	2.5	2.95
	C	3.7	3.9
	D	28.5	29.5
	E	1.2	1.4
	F	6.2	6.55
	G	2.85	3.25
	H	15	16
	I	0.35	0.42
	J	4.3	4.55
	K	1.2	1.4
	L	Typ5.08	
	L1	13	14
	L2	8.5	9.5
	M	Typ2.54	
	N	2.8	3.5
	O	0.7	0.9
All Dimensions in millimeter			

TO-220F

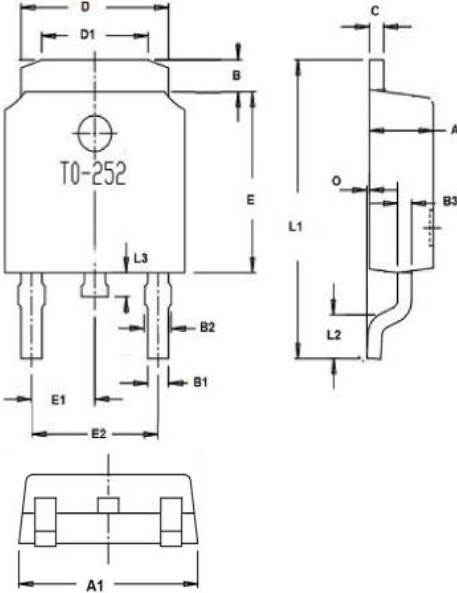
	Dim.	Min.	Max.
	A	9.95	10.35
	B	2.95	3.25
	C	1.25	1.45
	D	12.65	12.95
	E	0.4	0.6
	F	2.8	3.5
	G	1.3	1.45
	H	Typ 2.54	
	I	Typ 5.08	
	J	4.6	4.75
	K	2.45	2.65
	L	6.45	6.85
	M	15.4	16
	N	2.75	3.05
	O	0.45	0.55
	P	0.7	0.9
All Dimensions in millimeter			

Package Outline Dimensions Millimeters

TO-263

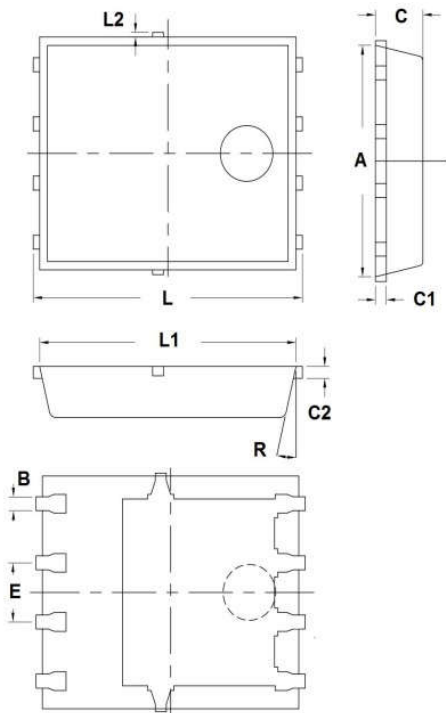
	Dim.	Min.	Max.
	A	10.1	10.35
	B	6	8
	C	1.2	1.5
	D	0.55	1
	E	4.3	5.3
	F	1.4	1.6
	G	0.75	0.85
	H	1.2	1.5
	I	Typ2.54	
	J	8.5	9.5
	K	4.3	4.55
	L	1.25	1.35
	M	0.02	0.23
	N	2.2	2.8
	O	0.3	0.4
	All Dimensions in millimeter		

TO-252

	Dim.	Min.	Max.
	A	2.1	2.5
	A1	6.3	6.9
	B	0.95	1.55
	B1	0.6	0.8
	B2	0.75	0.95
	C	Typ0.5	
	D	5.3	5.5
	D1	3.65	4.05
	E	5.8	6.4
	E1	Typ2.3	
	E2	Typ4.6	
	O	0	0.15
	L1	10	11
	L2	Typ1.5	
	L3	0.7	1
	All Dimensions in millimeter		

Package Outline Dimensions Millimeters

PDFN5*6-8L

	Dim.	Min.	Max.
	A	4.8	5.2
	B	0.25	0.35
	C	1	1.2
	C1	Typ 0.254	
	C2	Typ 0.254	
	E	Typ 1.27	
	L	6	6.3
	L1	5.7	6
	L2	MAX 0.2	
	R	Typ 13°	
All Dimensions in millimeter			