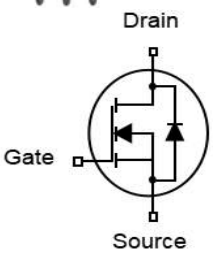
Features

- N-Channel
- Low gate Charge
- Low reverse transfer capacitance
- Fast switching capability
- 100% EAS Tested

V_{DS}	250	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	15	mΩ
I_D	90	A

TO-220



Part ID	Package Type	Marking	Packing
ZT15N25	TO-220	ZT15N25	1000pcs/Tape

Absolute Maximum Ratings T_A =25°C, unless otherwise specified

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage		±20	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		250	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_{DM}	Drain Current-Continuous@ Current-Pulsed (Note 1)	T_C =25°C	360	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	T_C =25°C	90	A
		T_C =100°C	57	A
P_D	Maximum Power Dissipation		520	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.24	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient		40	°C/W
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 2)		1097	mJ

Electrical Characteristics (T_J=25℃ unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_j=25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	250	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=250V,V_{GS}=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	3.0	--	5.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=50A	--	15	18.5	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
Ciss	Input Capacitance	V_{DS}=50V,V_{GS}=0V, f=1MHz	--	12396	--	pF
Coss	OutputCapacitance		--	598	--	pF
Crss	ReverseTransferCapacitance		--	261	--	pF
Rg	Gate Resistance	f=1MHz	--	1.7	--	Ω
Qg	Total Gate Charge	V_{DS}=100V,I_D=50A, V_{GS}=10V	--	210	--	nC
Qgs	Gate-SourceCharge		--	75	--	nC
Qgd	Gate-DrainCharge		--	71	--	nC
Switching Characteristics						
Td(on)	Turn-on Delay Time	V_{DS}=100V, I_D =50A, R_G=5Ω, V_{GS}=10V	--	34	--	ns
Tr	Turn-on Rise Time		--	163	--	ns
Td(off)	Turn-Off Delay Time		--	66	--	ns
Tf	Turn-Off Fall Time		--	103	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
I_S	Diode Forward Current		--	--	90	A
V_{SD}	Forward on voltage	I_S=50A,V_{GS}=0V	--	--	1.2	V
Trr	Reverse Recovery Time	T_j=25℃,I_S =50A, V_{DD}=50V, di/dt=100A/μs	--	160	--	ns
Qrr	Reverse Recovery Charge		--	1400	--	nC

Notes:

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

2.V_{DD}=100V, L=0.5mH, R_g=25Ω, Starting T_J=25 ℃

Electrical Characteristics Diagrams

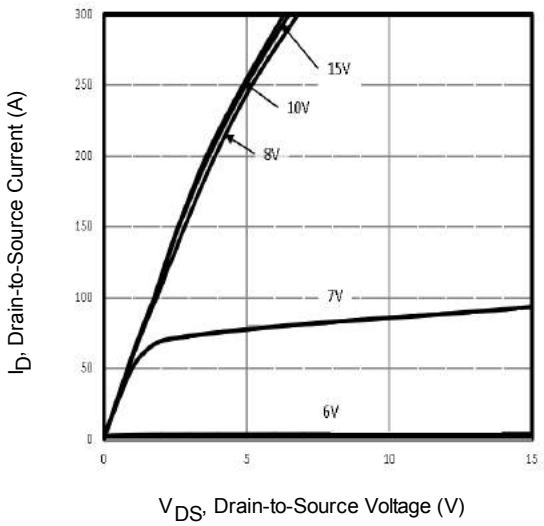


Fig 1. Typical Output Characteristics

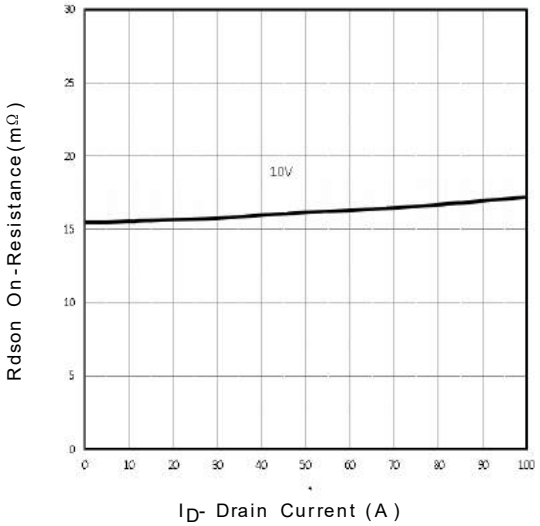


Fig 4. Rdson-Drain Current

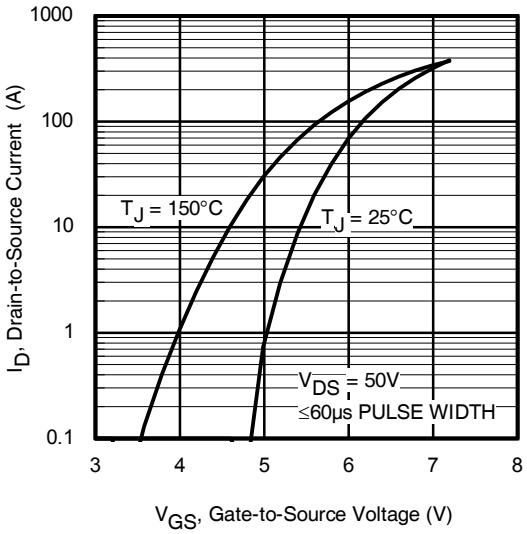


Fig 2. Typical Transfer Characteristics

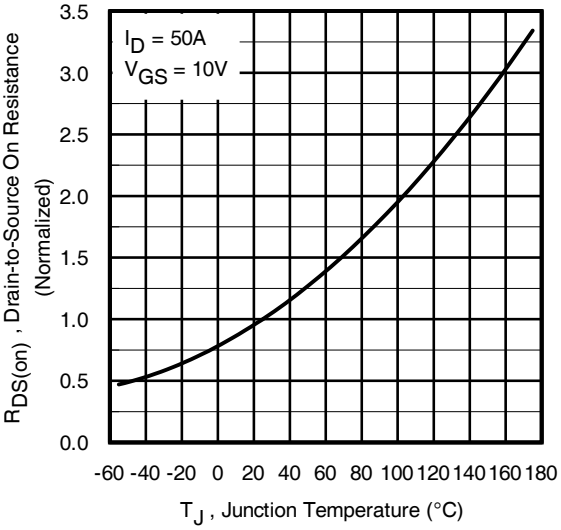


Fig 5. Normalized On-Resistance vs. Temperature

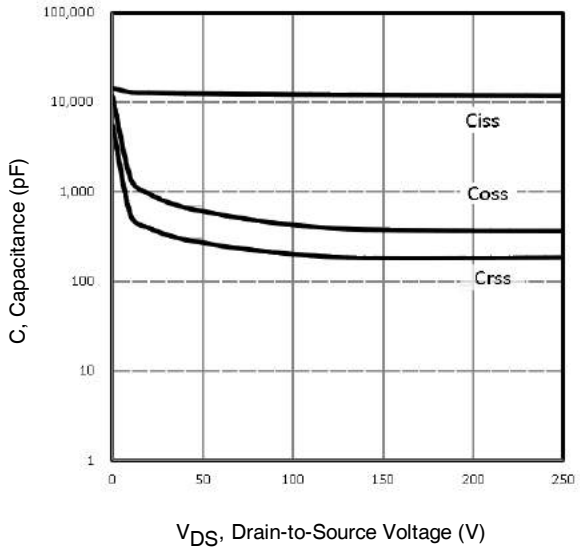


Fig 3. Typical Capacitance vs. Drain-to-Source Voltage

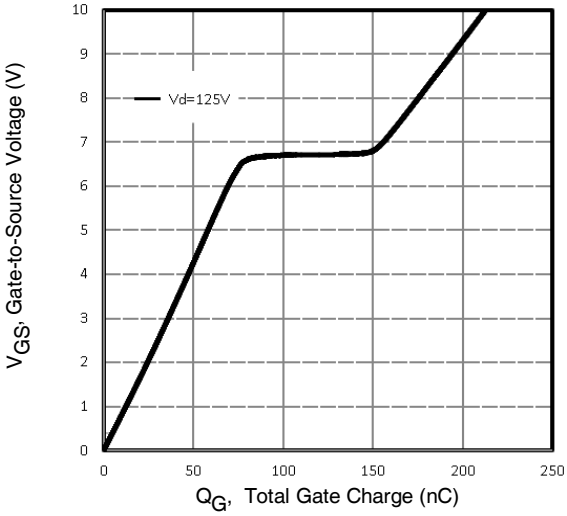


Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage

Electrical Characteristics Diagrams

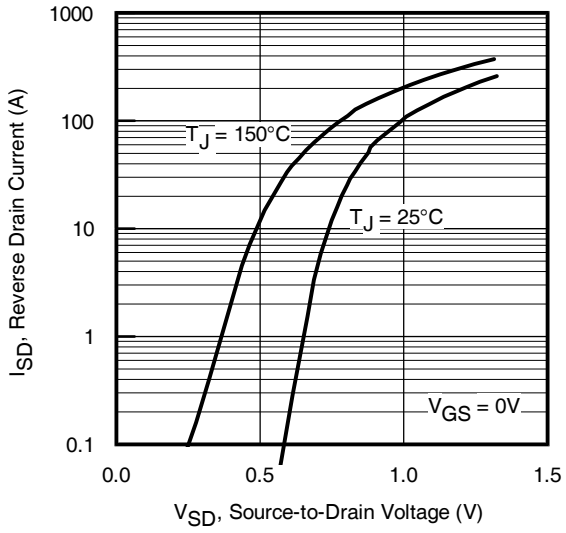


Fig 7. Typical Source-Drain Diode Forward Voltage

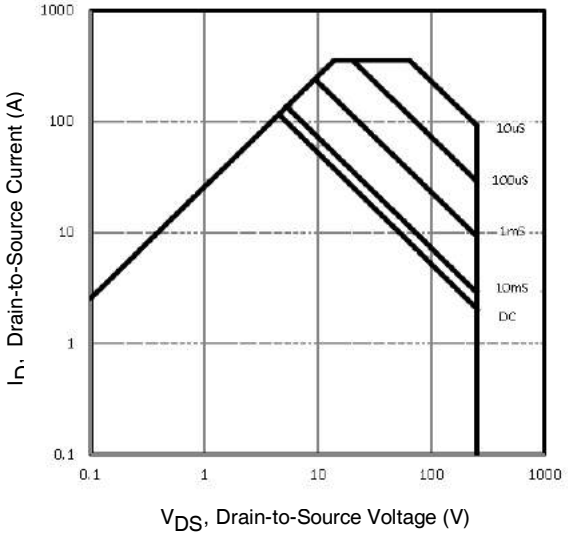


Fig 9. Maximum Safe Operating Area

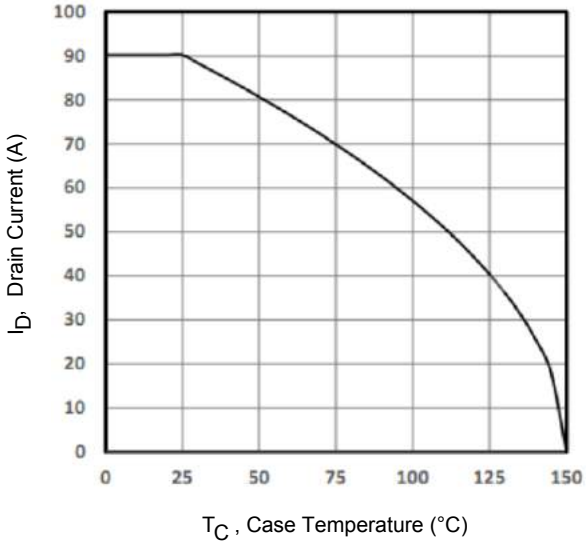


Fig 8. Maximum Drain Current vs. Case Temperature

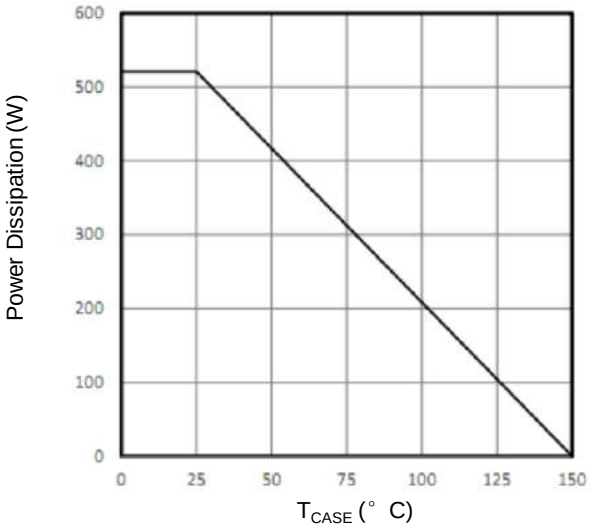


Fig 10. Power De-rating

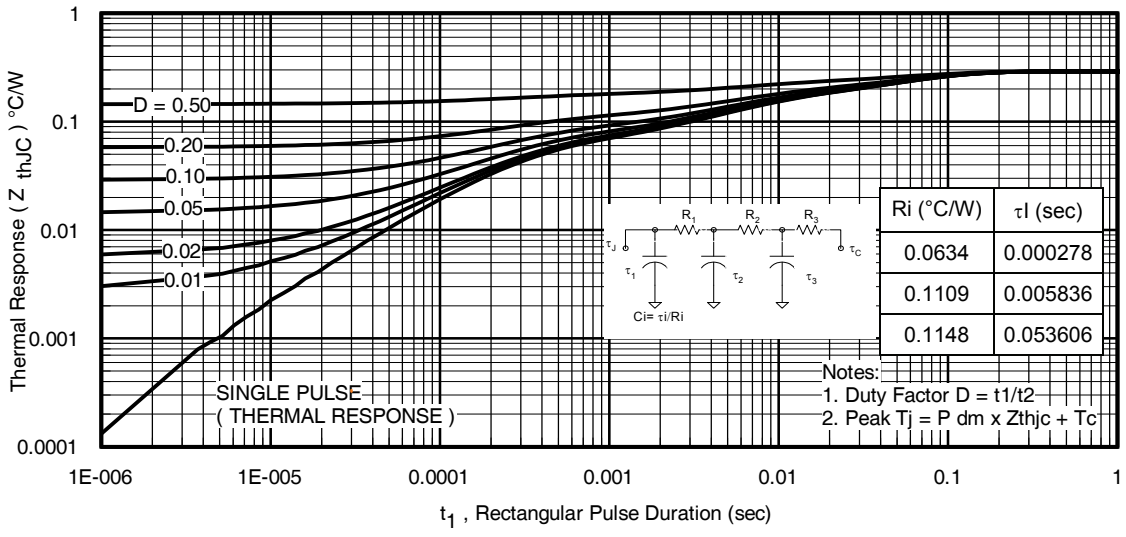
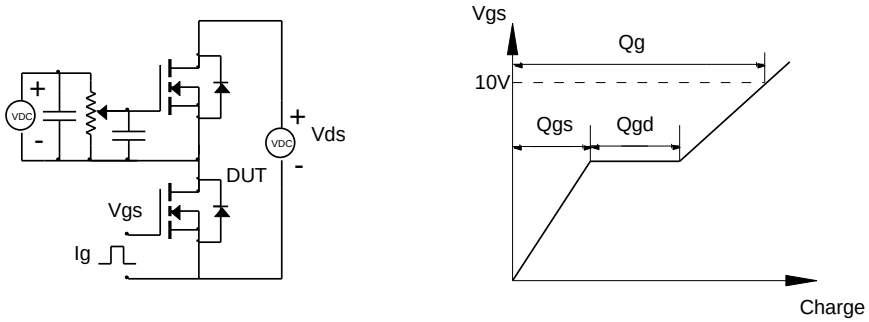


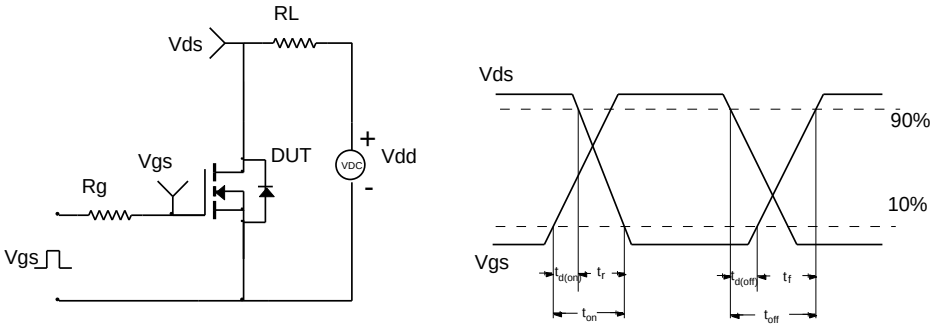
Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

Test Circuit and Waveform

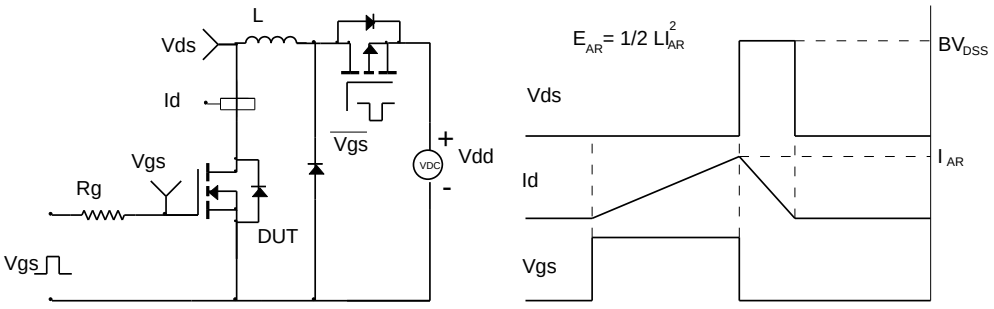
Gate Charge Test Circuit & Waveform



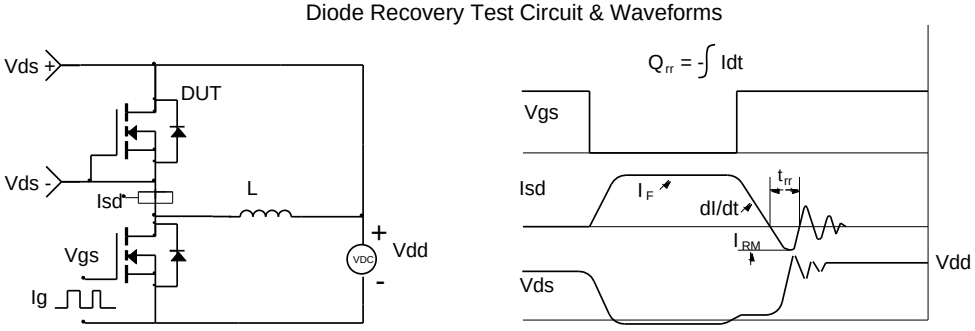
Resistive Switching Test Circuit & Waveforms



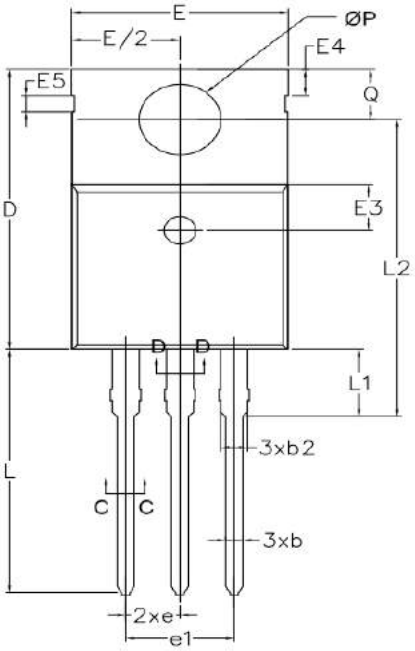
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

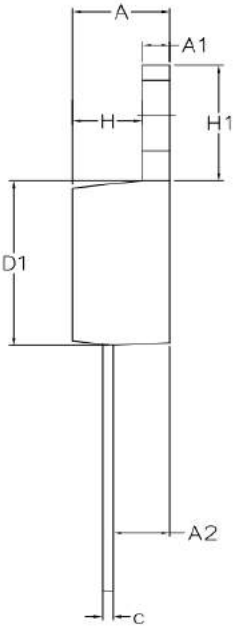


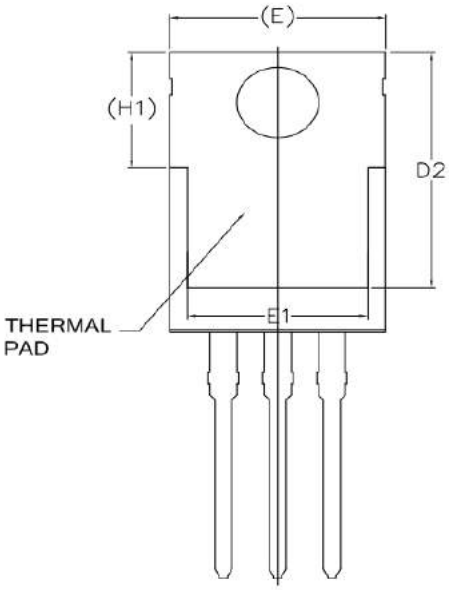
Diode Recovery Test Circuit & Waveforms

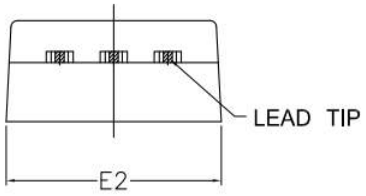


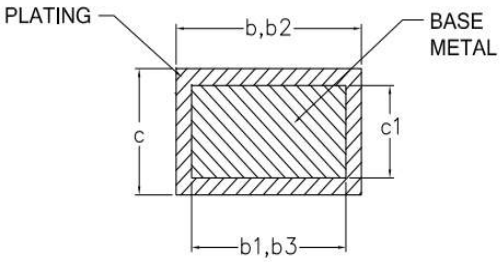
TO-220-3L Package Information











SECTION:C-C&D-D

SYMBOLS	COMMON		
	MM		
	MIN.	NOM.	MAX.
A	4.47	4.57	4.67
A1	1.20	1.30	1.40
A2	2.35	2.67	2.90
b	0.71	0.80	0.91
b1	0.71	0.80	0.86
b2	1.22	1.27	1.36
b3	1.22	1.27	1.31
c	0.47	0.50	0.60
c1	0.47	0.50	0.55
D	14.70	15.30	15.80
D1	8.90	9.00	9.47
D2	11.75	/	13.60
E	9.70	/	10.37
E1	7.00	8.44	8.89
E2	9.80	10.11	10.20
E3	2.40	2.50	2.60
E4	1.27	1.42	1.57
E5	0.90TYP		
e	2.54BSC		
e1	5.08BSC		
H	3.00	3.27	3.40
H1	6.15	6.30	6.45
L	12.90	13.45	14.80
L1	2.54	3.69	3.84
L2	12.13	16.25	16.5
ØP	3.60	3.84	3.90
Q	2.65	2.74	2.95

Customer Service

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