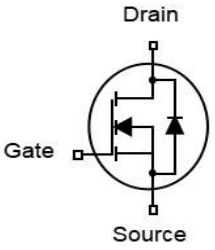
Features

- N-Channel
- Low FOM $R_{DS(on)} \times Q_{gd}$
- Ultra-low on-resistance
- Halogen-free
- RoHS compliant
- 100% EAS Tested

V_{DS}	150	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	5.6	mΩ
I_D	140	A

TO-247



Part ID	Package Type	Marking	Packing
ZTG060N15T	TO-247	ZTG060N15T	600pcs/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		150	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 2)	T_C =25°C	560	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous (Note 1)	T_C =25°C	140	A
		T_C =100°C	100	A
P_D	Maximum Power Dissipation		200	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.47	°C/W
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 3)		625	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	150	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=150V,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	2.0	3.0	4.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A	--	5.6	6.5	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
Ciss	Input Capacitance	V_{DS}=75V,V_{GS}=0V, f=1MHz	--	5926	--	pF
Coss	OutputCapacitance		--	544	--	pF
Crss	ReverseTransferCapacitance		--	23	--	pF
Rg	GateResistancef=1MHz	f=1MHz	--	2.2	--	Ω
Qg	Total Gate Charge	V_{DS}=75V,I_D=20A, V_{GS}=10V	--	83	--	nC
Qgs	Gate-SourceCharge		--	24.8	--	nC
Qgd	Gate-DrainCharge		--	16.9	--	nC
Switching Characteristics						
Td(on)	Turn-on Delay Time	V_{DD}=75V, R_L=3.75Ω, R_G=6Ω, V_{GS}=10V	--	32	--	ns
Tr	Turn-on Rise Time		--	49	--	ns
Td(off)	Turn-Off Delay Time		--	80	--	ns
Tf	Turn-Off Fall Time		--	46	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
I_{SD}	Source-Drain Current (Body Diode)		--	--	140	A
V_{SD}	Forward on voltage	I_S=20A,V_{GS}=0V	--	--	1.2	V
Trr	Reverse Recovery Time	T_j=25℃,I_D =15A, di/dt=100A/μs	--	90	--	ns
Qrr	Reverse Recovery Charge		--	360	--	nC

Notes:

1. The max drain current rating is package limited
2. Repetitive Rating: Pulse width limited by maximum junction temperature
3. L = 0.5 mH, V_{DD} = 75V, I_{AS} = 50 A, R_G = 25 Ω, Starting T_J = 25 °C

Electrical Characteristics Diagrams

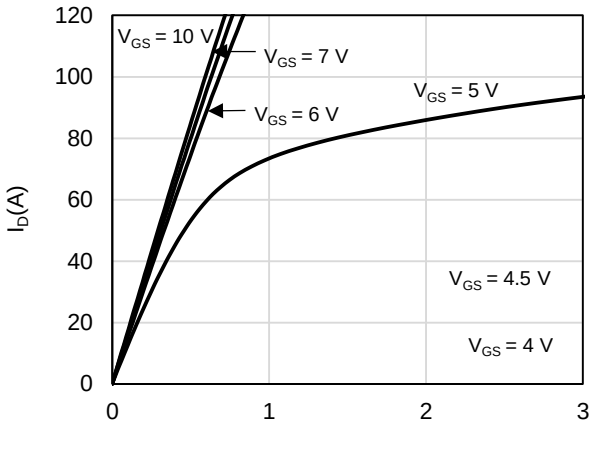


Figure 1: On-Region Characteristics

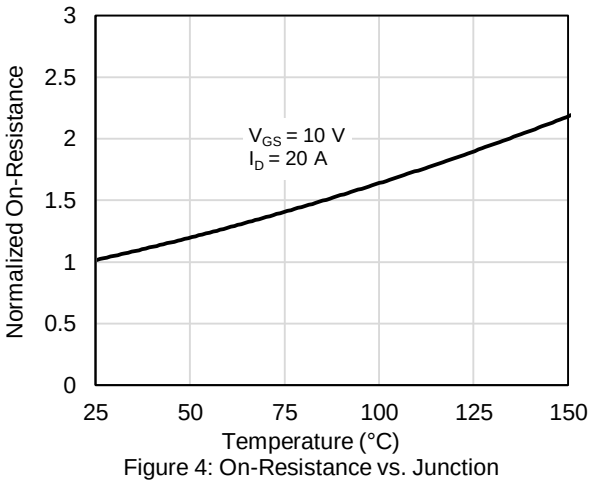


Figure 4: On-Resistance vs. Junction Temperature

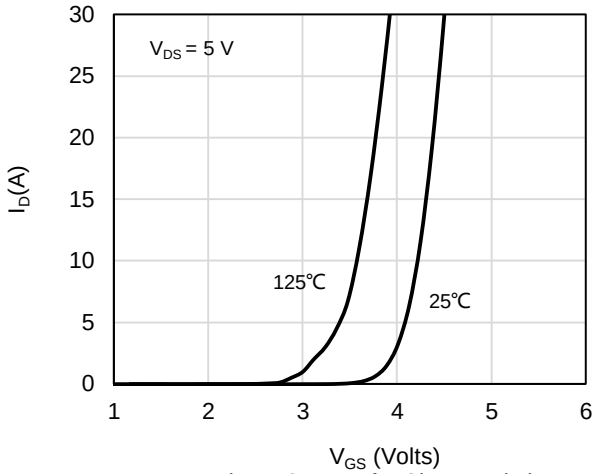


Figure 2: Transfer Characteristics

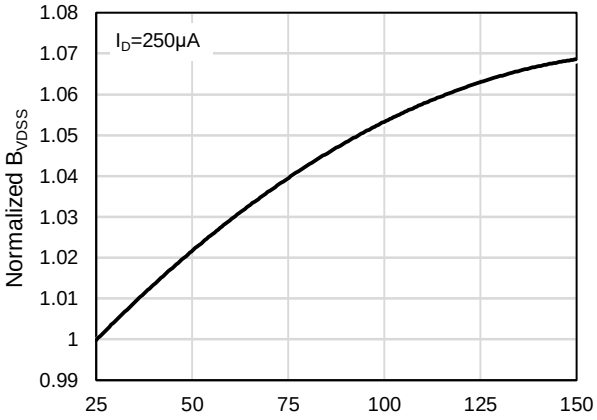


Figure 5: Breakdown Voltage vs. Junction Temperature

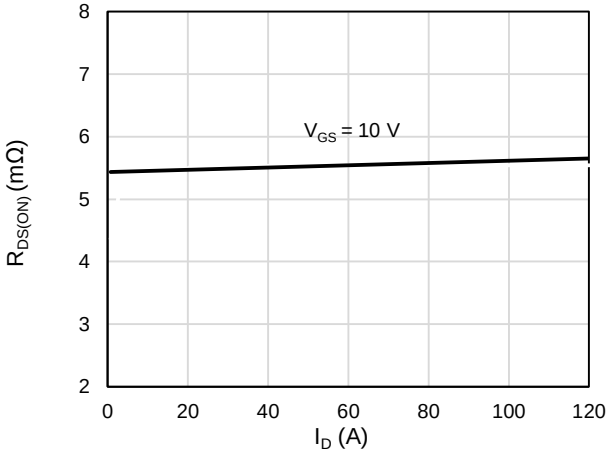


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

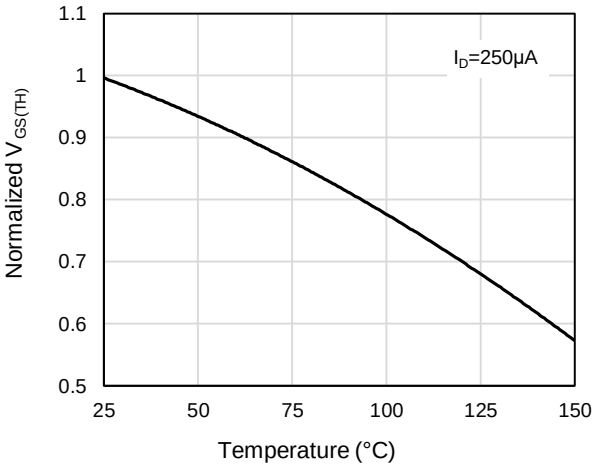


Figure 6: Threshold Voltage vs. Junction Temperature

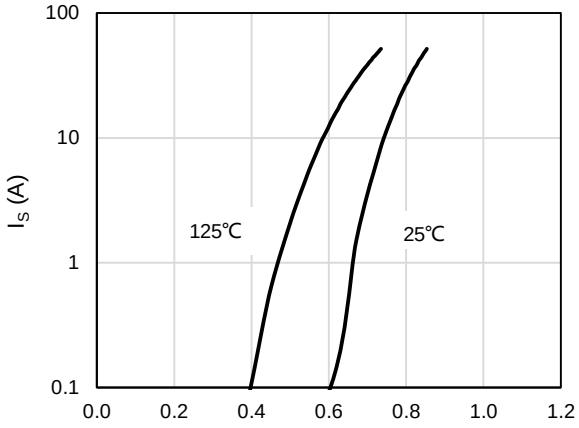


Figure 7: Body-Diode Characteristics

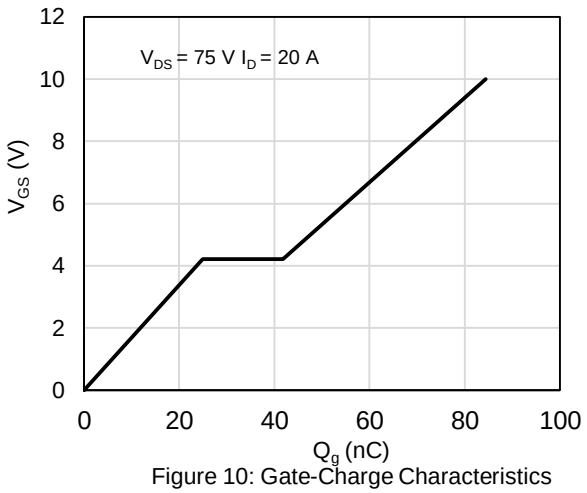


Figure 10: Gate-Charge Characteristics

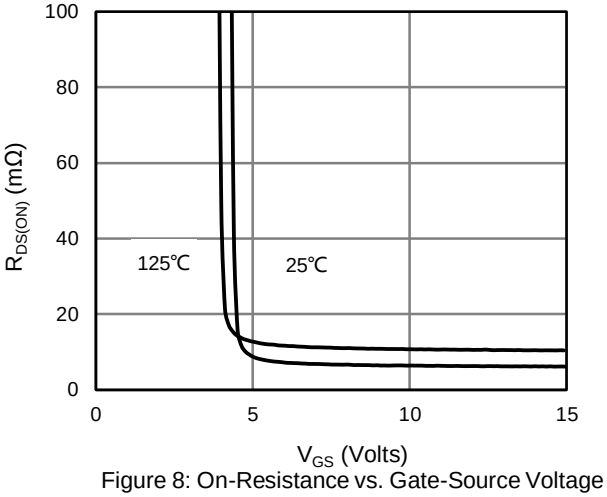


Figure 8: On-Resistance vs. Gate-Source Voltage

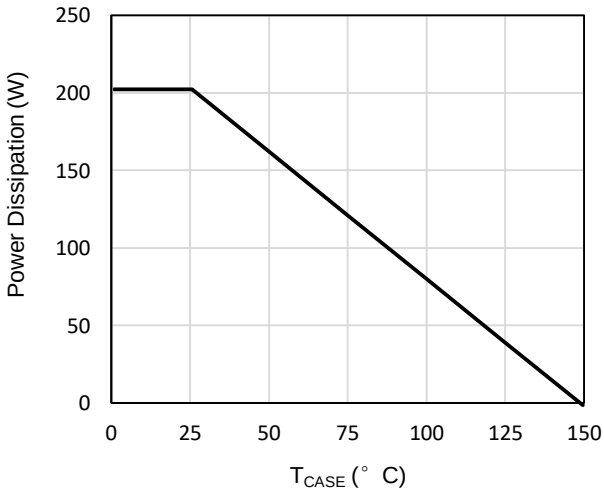


Figure 11: Power De-rating

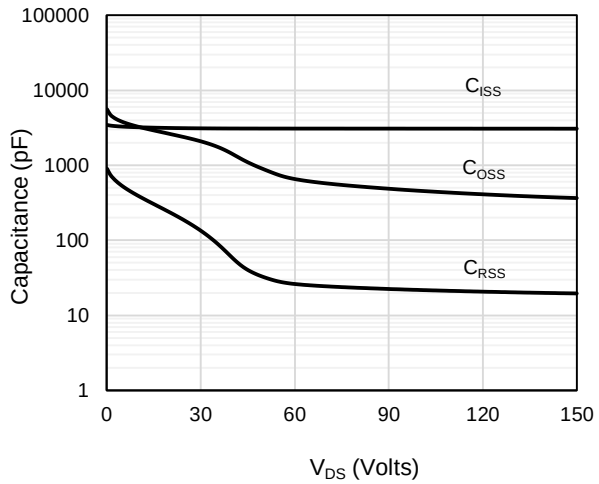


Figure 9: Capacitance Characteristics

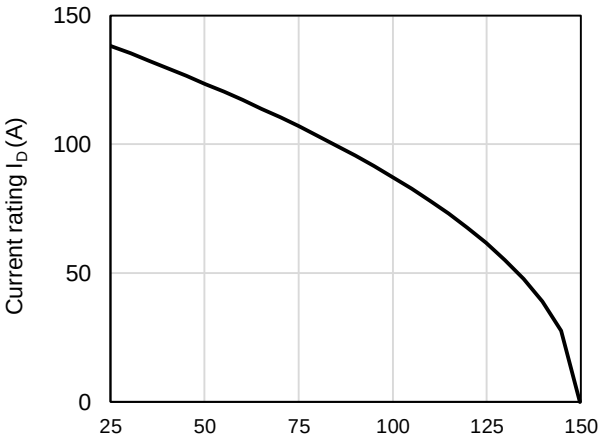


Figure 12: Current De-rating

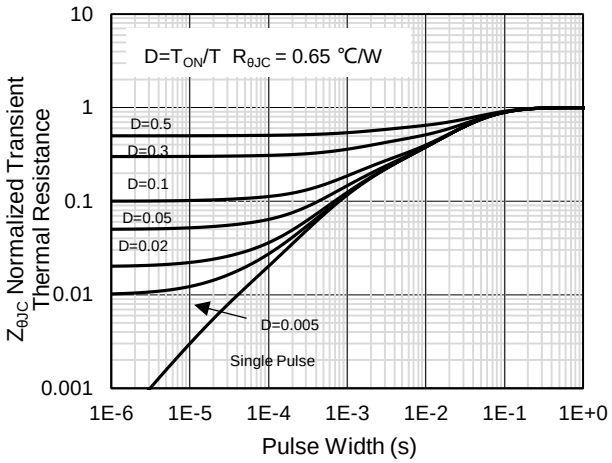


Figure 13: Normalized Maximum Transient Thermal Impedance

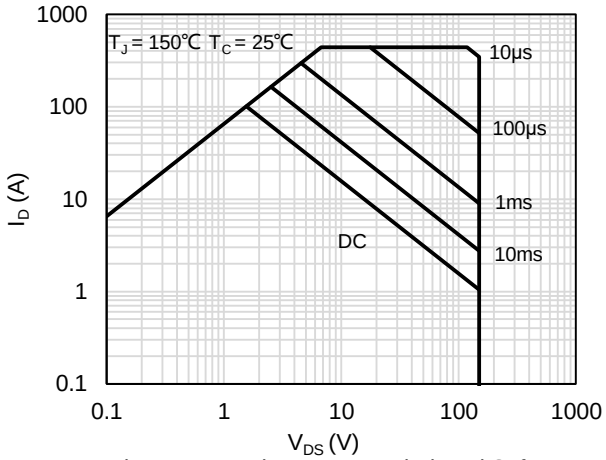
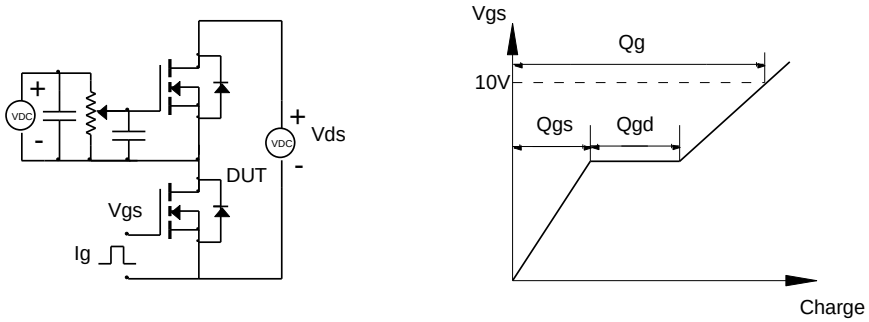


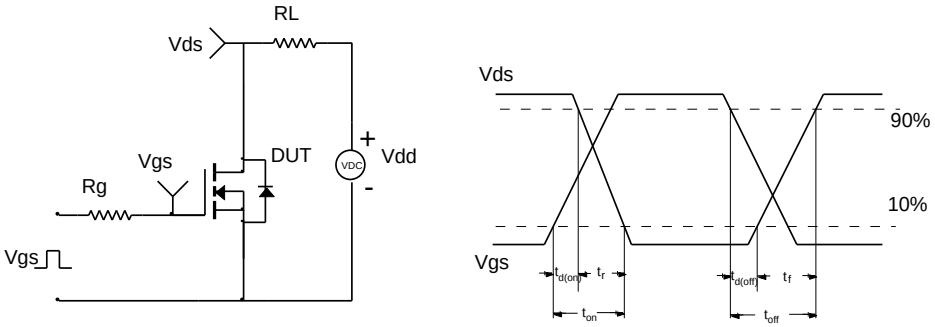
Figure 14: Maximum Forward Biased Safe Operating Area

Test Circuit and Waveform

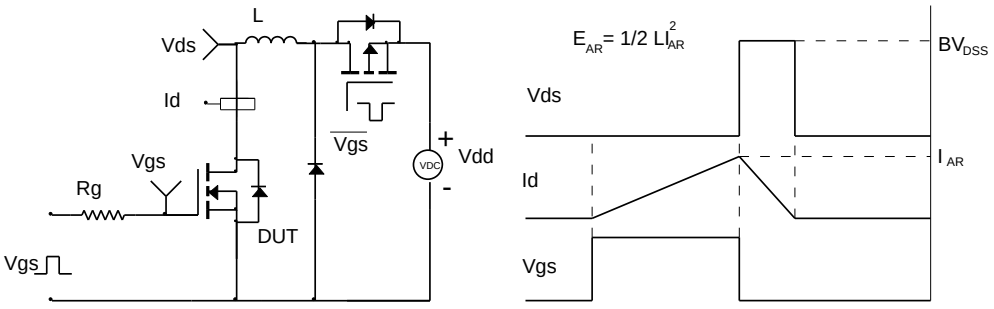
Gate Charge Test Circuit & Waveform



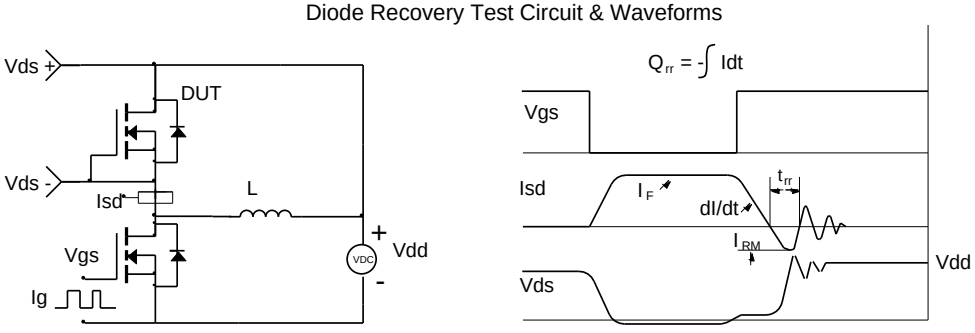
Resistive Switching Test Circuit & Waveforms



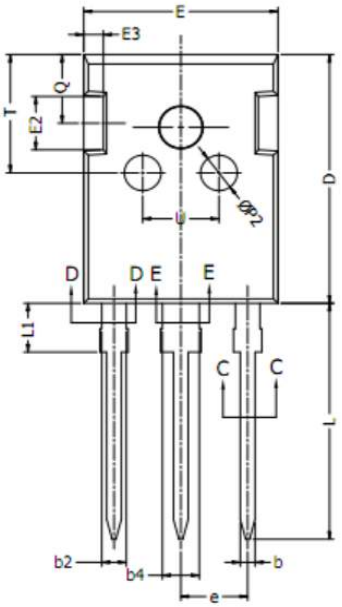
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

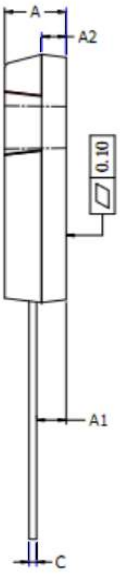


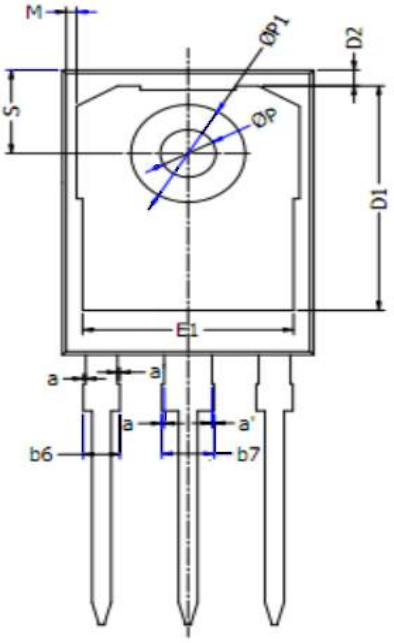
Diode Recovery Test Circuit & Waveforms

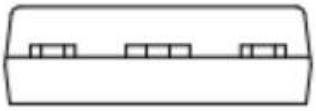


TO-247 Package Information









SYMBOL	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
a	0	---	0.15
a'	0	---	0.15
b	1.16	---	1.26
b1	1.15	1.2	1.22
b2	1.96	---	2.06
b3	1.95	2.00	2.02
b4	2.96	---	3.06
b5	2.96	3.00	3.02
b6	---	---	2.25
b7	---	---	3.25
c	0.59	---	0.66
c1	0.58	0.60	0.62
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.17	1.35
E	15.70	15.80	15.90
E1	13.10	13.30	13.50
E2	4.40	4.50	4.60
E3	1.50	1.60	1.70
e	5.436 BSC		
L	19.80	19.92	20.10
L1	---	---	4.30
M	0.35	---	0.95
P	3.40	3.50	3.60
P1	7.00	---	7.40
P2	2.40	2.50	2.60
Q	5.60	---	6.00
S	6.05	6.15	6.25
T	9.80	---	10.20
U	6.00	---	6.40

Customer Service

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