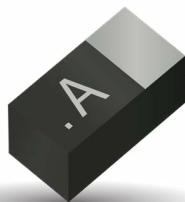


# F38 Series

## Conductive Polymer, Miniature, Undertab Solid Electrolytic Chip Capacitors

### FEATURES

- Conductive Polymer Electrode
- Benign Failure Mode Under Recommended Use Conditions
- Compliant to the RoHS3 directive 2015/863/EU
- SMD Facedown
- Small and Low Profile
- High Volumetric Efficiency
- 100% Surge Current Tested

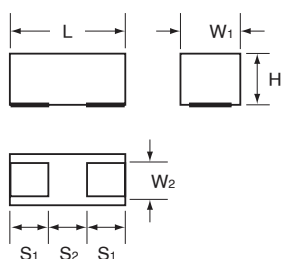


### APPLICATIONS

- Smartphone
- Tablet PC
- Wireless Module
- Portable Game
- Bulk Decoupling of SoC (System on Chip)

### CASE DIMENSIONS: millimeters (inches)

Code	Special Code	EIA Code	EIA Metric	L	W <sub>1</sub>	W <sub>2</sub>	H	S <sub>1</sub>	S <sub>2</sub>
M		0603	1608-09	1.60 <sup>+0.20</sup> <sub>-0.10</sub> (0.063 <sup>+0.008</sup> <sub>-0.004</sub> )	0.85 <sup>+0.20</sup> <sub>-0.10</sub> (0.033 <sup>+0.008</sup> <sub>-0.004</sub> )	0.65±0.10 (0.026±0.004)	0.80±0.10 (0.031±0.004)	0.50±0.10 (0.020±0.004)	0.60±0.10 (0.024±0.004)
M	AXE	0603	1608-10	1.60 <sup>+0.20</sup> <sub>-0.10</sub> (0.063 <sup>+0.008</sup> <sub>-0.004</sub> )	0.85 <sup>+0.20</sup> <sub>-0.10</sub> (0.033 <sup>+0.008</sup> <sub>-0.004</sub> )	0.65±0.10 (0.026±0.004)	1.00 Max. (0.039 Max.)	0.50±0.10 (0.020±0.004)	0.60±0.10 (0.024±0.004)
S		0805	2012-09	2.00 <sup>+0.20</sup> <sub>-0.10</sub> (0.079 <sup>+0.008</sup> <sub>-0.004</sub> )	1.25 <sup>+0.20</sup> <sub>-0.10</sub> (0.049 <sup>+0.008</sup> <sub>-0.004</sub> )	0.90±0.10 (0.035±0.004)	0.80±0.10 (0.031±0.004)	0.50±0.10 (0.020±0.004)	1.00±0.10 (0.039±0.004)
S	H8Z	0805	2012-08	2.00 <sup>+0.20</sup> <sub>-0.10</sub> (0.079 <sup>+0.008</sup> <sub>-0.004</sub> )	1.25 <sup>+0.20</sup> <sub>-0.10</sub> (0.049 <sup>+0.008</sup> <sub>-0.004</sub> )	0.90±0.10 (0.035±0.004)	0.80 Max. (0.031 Max.)	0.50±0.10 (0.020±0.004)	1.00±0.10 (0.039±0.004)
U		0402	1106-06	1.10±0.05 (0.043±0.002)	0.60±0.05 (0.024±0.002)	0.35±0.05 (0.014±0.002)	0.55±0.05 (0.022±0.002)	0.30±0.05 (0.012±0.002)	0.50±0.05 (0.020±0.002)

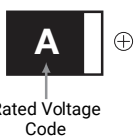


### MARKING

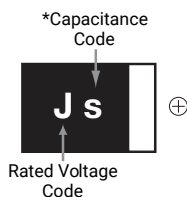
#### U CASE



#### M CASE



#### S CASE



### HOW TO ORDER

<b>F38</b>	<b>1A</b>	<b>225</b>	<b>M</b>	<b>M</b>						
Type	Rated Voltage	Capacitance Code	Tolerance M=±20%	Case Size See table above	Packaging	Special Code				
		pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)			<table border="1"> <tr> <th>Reel Dia (φ180)</th> <th>Tape Width (mm)</th> </tr> <tr> <td>A</td> <td>8</td> </tr> </table>	Reel Dia (φ180)	Tape Width (mm)	A	8	AXE = Rated temperature 60°C and H dimension 1.0mm Max. AXEH3 = Rated temperature 60°C and H dimension 1.0mm Max., Low ESR LZT = Rated temperature 60°C LZTH1 = Rated temperature 60°C, Low ESR AH1, AH2, AH3 = Low ESR H8Z = H dimension 0.8mm Max.
Reel Dia (φ180)	Tape Width (mm)									
A	8									

### TECHNICAL SPECIFICATIONS

Category Temperature Range:	-55 to +105°C
Rated Range:	+85°C or +60°C (*2)
Capacitance Tolerance:	±20% at 120Hz
Dissipation Factor:	Refer to next page (120Hz)
ESR 100kHz:	Refer to next page (120Hz)
Leaking Current:	Refer to next page At 20°C after application of rated voltage for 5 minutes Provided that: After 5 minute's application of rated voltage, leakage current at 105°C 10 times or less than 20°C specified value.

Архангельск (8182)63-90-72  
 Астана (7172)727-132  
 Астрахань (8512)99-46-04  
 Барнаул (3852)73-04-60  
 Белгород (4722)40-23-64  
 Брянск (4832)59-03-52  
 Владивосток (423)249-28-31  
 Волгоград (844)278-03-48  
 Вологда (8172)26-41-59  
 Воронеж (473)204-51-73  
 Екатеринбург (343)384-55-89  
 Иваново (4932)77-34-06

Ижевск (3412)26-03-58  
 Иркутск (395)279-98-46  
 Казань (843)206-01-48  
 Калининград (4012)72-03-81  
 Калуга (4842)92-23-67  
 Кемерово (3842)65-04-62  
 Киров (8332)68-02-04  
 Краснодар (861)203-40-90  
 Красноярск (391)204-63-61  
 Курск (4712)77-13-04  
 Липецк (4742)52-20-81  
 Киргизия (996)312-96-26-47

Магнитогорск (3519)55-03-13  
 Москва (495)268-04-70  
 Мурманск (8152)59-64-93  
 Набережные Челны (8552)20-53-41  
 Нижний Новгород (831)429-08-12  
 Новокузнецк (3843)20-46-81  
 Новосибирск (383)227-86-73  
 Омск (3812)21-46-40  
 Орел (4862)44-53-42  
 Оренбург (3532)37-68-04  
 Пенза (8412)22-31-16  
 Россия (495)268-04-70

Пермь (342)205-81-47  
 Ростов-на-Дону (863)308-18-15  
 Рязань (4912)46-61-64  
 Самара (846)206-03-16  
 Санкт-Петербург (812)309-46-40  
 Саратов (845)249-38-78  
 Севастополь (8692)22-31-93  
 Симферополь (3652)67-13-56  
 Смоленск (4812)29-41-54  
 Сочи (862)225-72-31  
 Ставрополь (8652)20-65-13  
 Казахстан (772)734-952-31

Сургут (3462)77-98-35  
 Тверь (4822)63-31-35  
 Томск (3822)98-41-53  
 Тула (4872)74-02-29  
 Тюмень (3452)66-21-18  
 Ульяновск (8422)24-23-59  
 Уфа (347)229-48-12  
 Хабаровск (4212)92-98-04  
 Челябинск (351)202-03-61  
 Череповец (8202)49-02-64  
 Ярославль (4852)69-52-93

# F38 Series

## Conductive Polymer, Miniature, Undertab Solid Electrolytic Chip Capacitors

### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage					*Cap Code
µF	Code	4V (0G)	6.3V (0J)	8V (0K)	10V (1A)	25V (1E)	30V (1S)
1.0	105		U				A
2.2	225				M	M	J
4.7	475		U		M/S	S	S
10	106		M/M(AH1,AH2)/S/U		M/M(AH1)/S		a
22	226		M/M(AH3,AH1)/S/S(AH1)		M*4/S		J
33	336		M**/S	S***	S**		n
47	476		M*4/M*4(H3)/S/ S(AH1)/S***	S	S**		s
68	686		S**				w
100	107	S**	S**/S**(H1)				A

Released ratings, (Low ESR)

\*4 (AXE) Rated temperature 60°C and H dimension 1.0mm Max. Please contact KYOCERA AVX when you need detail spec.

\*\* (LZT) Rated temperature 60°C. Please contact KYOCERA AVX when you need detail spec.

\*\*\* (H8Z) H dimension 0.8mm Max.

Please contact to your local KYOCERA AVX sales office when these series are being designed in your application.

Engineering Samples - Please Contact KYOCERA AVX

### THE CORRELATIONS AMONG RATED VOLTAGE, SURGE VOLTAGE AND DERATED VOLTAGE

	F38 (Standard)				
Rated Voltage (V) ≤85°C	6.3	8	10	25	30
85°C Surge Voltage (V)	8	10	13	32	39
105°C Derated Voltage (V)	5	6.3	8	20	24

	F38-LZT, F38-AXE		
Rated Voltage (V) ≤60°C	4	6.3	10
60°C Surge Voltage (V)	5.2	8	13
85°C Derated Voltage (V)	2.8	4.5	7.2
105°C Derated Voltage (V)	2	3.3	5

### RATINGS & PART NUMBER REFERENCE

Part Number	Case Size	Capacitance (µF)	Rated Voltage (V)	DCL (µA)	DF @ 120Hz (%)	ESR @ 100kHz (mΩ)	100kHz RMS Current (mA)				*3 ΔC/C (%)	MSL
							45°C	60°C	85°C	105°C		
<b>4 Volt</b>												
F380G107MSALZT	S	100	4	80.0	10	200	474	332	-	237	*	3
<b>6.3 Volt</b>												
F380J105MUA	U	1	6.3	0.6	6	1500	100	-	70	50	*	3
F380J475MUA	U	4.7	6.3	20.0	10	1500	100	-	70	50	*	3
F380J106MMA	M	10	6.3	10.0	8	500	224	-	157	112	*	3
F380J106MMAAH1	M	10	6.3	10.0	8	300	289	-	202	144	*	3
F380J106MMAAH2	M	10	6.3	10.0	8	200	354	-	247	177	*	3
F380J106MSA	S	10	6.3	6.3	10	250	424	-	297	212	*	3
F380J106MUA	U	10	6.3	20.0	10	1500	100	-	70	50	*	3
F380J226MMA	M	22	6.3	13.9	10	500	224	-	157	112	*	3
F380J226MMAAH3	M	22	6.3	13.9	10	300	289	-	202	144	*	3
F380J226MMAAH1	M	22	6.3	13.9	10	200	354	-	247	177	*	3
F380J226MSA	S	22	6.3	13.9	10	200	474	-	332	237	*	3
F380J226MSAAH1	S	22	6.3	13.9	10	150	548	-	383	274	*	3
F380J336MMALZT	M	33	6.3	41.6	10	500	224	157	-	112	*	3
F380J336MSA	S	33	6.3	20.8	10	200	474	-	332	237	*	3
F380J476MMAAXE	M	47	6.3	59.2	10	500	224	157	-	112	*	3
F380J476MMAAXEH3	M	47	6.3	59.2	10	300	289	202	-	144	*	3
F380J476MSA	S	47	6.3	29.6	10	200	474	-	332	237	*	3
F380J476MSAAH1	S	47	6.3	29.6	10	150	548	-	383	274	*	3
F380J476MSAH8Z	S	47	6.3	29.6	10	200	474	-	332	237	*	3
F380J686MSALZT	S	68	6.3	86.0	10	200	474	332	-	237	*	3
F380J107MSALZT	S	100	6.3	126.0	10	200	474	332	-	237	*	3
F380J107MSALZTH1	S	100	6.3	126.0	10	150	548	383	-	274	*	3
<b>8 Volt</b>												
F380K336MSAH8Z	S	33	8	26.4	10	200	474	-	332	237	*	3
F380K476MSA	S	47	8	37.6	10	200	474	-	332	237	*	3
<b>10 Volt</b>												
F381A225MMA	M	2.2	10	10.0	6	500	224	-	157	112	*	3
F381A475MMA	M	4.7	10	10.0	6	500	224	-	157	112	*	3
F381A475MSA	S	4.7	10	4.7	10	300	387	-	271	194	*	3
F381A106MMA	M	10	10	10.0	15	500	224	-	157	112	*	3
F381A106MMAAH1	M	10	10	10.0	15	300	289	-	202	144	*	3
F381A106MSA	S	10	10	10.0	6	200	474	-	332	237	*	3
F381A226MMAAXE	M	22	10	44.0	10	500	224	157	-	112	*	3
F381A226MSA	S	22	10	22.0	10	200	474	-	332	237	*	3
F381A336MSALZT	S	33	10	99.0	10	200	474	332	-	237	*	3
F381A476MSALZT	S	47	10	94.0	10	200	474	332	-	237	*	3
<b>25 Volt</b>												
F381E225MMA	M	2.2	25	10.0	10	500	224	-	157	112	*	3
F381E475MSA	S	4.7	25	11.8	10	500	300	-	210	150	*	3
<b>30 Volt</b>												
F381S475MSA	S	4.7	30	14.1	10	500	300	-	210	150	*	3

\*3: ΔC/C Marked \*\*

Moisture Sensitivity Level (MSL) is defined according to J-STD-020

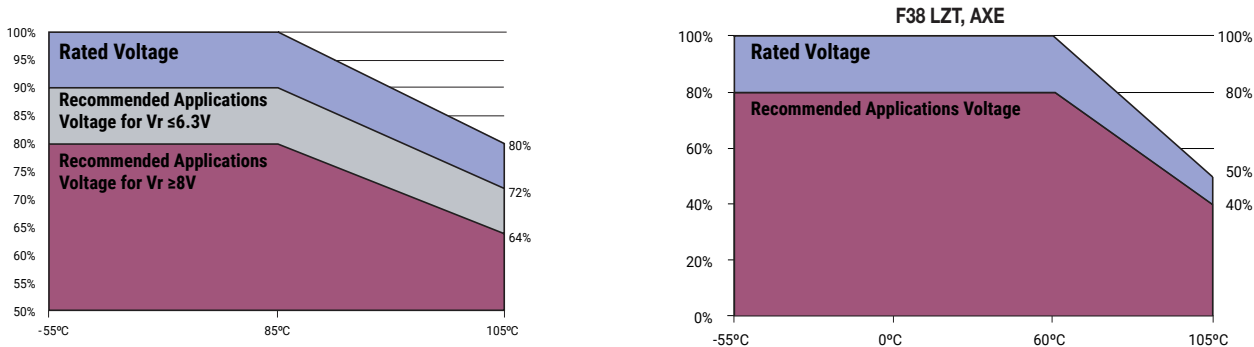
Item	All Case (%)
Damp Heat, steady state	-20 to +30
Rapid change of temperature	±20
Resistance soldering heat	±20
Surge	±20
Endurance	±20

# F38 Series

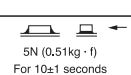
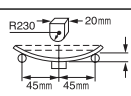
## Conductive Polymer, Miniature, Undertab Solid Electrolytic Chip Capacitors

### RECOMMENDED DERATING FACTOR

Voltage and temperature derating as percentage of Vr



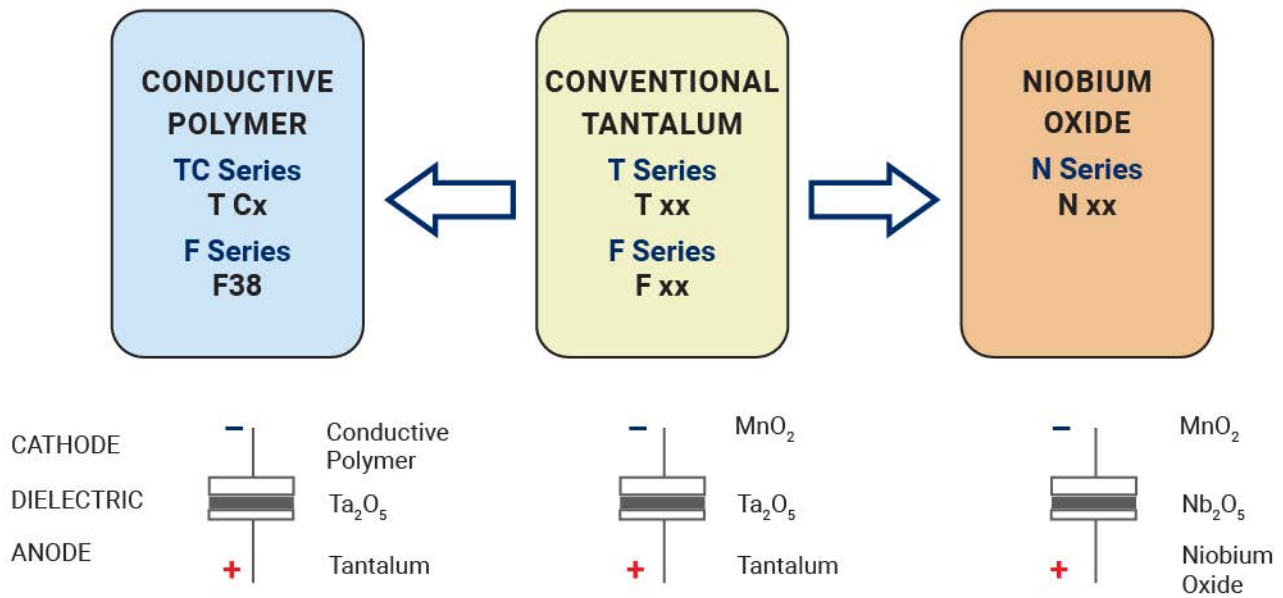
### QUALIFICATION TABLE

TEST	F38 series (Temperature Range -55°C to +105°C)	
	Condition	
<b>Damp Heat (Steady State)</b>	At 40°C, 90 to 95% R.H., 500 hours (No voltage applied) Capacitance Change ..... Refer to the table above (*3) Dissipation Factor ..... 200% or less of initial specified value Leakage Current ..... 300% or less of initial specified value	
<b>Temperature Cycles</b>	At -55°C / +105°C, 30 minutes each, 5 cycles Capacitance Change ..... Refer to the table above (*3) Dissipation Factor ..... 200% or less of initial specified value Leakage Current ..... 400% or less of initial specified value	
<b>Resistance to Soldering Heat</b>	5 seconds reflow at 260°C Capacitance Change ..... Refer to the table above (*3) Dissipation Factor ..... 200% or less of initial specified value Leakage Current ..... 300% or less of initial specified value	
<b>Surge</b>	After application of surge voltage in series with a 1kΩ resistor at the rate of 30 seconds ON, 30 seconds OFF, for 1000 successive test cycles at 85°C or 60°C (*2), capacitors shall meet the characteristic requirements in the table above. Capacitance Change ..... Refer to the table above (*3) Dissipation Factor ..... 200% or less of initial specified value Leakage Current ..... 300% or less of initial specified value	
<b>Endurance</b>	After 1000 hours' application of rated voltage in series with a 3Ω resistor at 85°C or 60°C (*2), capacitors shall meet the characteristic requirements in the table above. Capacitance Change ..... Refer to the table above (*3) Dissipation Factor ..... 200% or less of initial specified value Leakage Current ..... 400% or less of initial specified value	
<b>Shear Test</b>	After applying the pressure load of 5N for 10±1 seconds horizontally to the center of capacitor side body which has no electrode and has been soldered beforehand on a substrate, there shall be found neither exfoliation nor its sign at the terminal electrode.	
<b>Terminal Strength</b>	Keeping a capacitor surface-mounted on a substrate upside down and supporting the substrate at both of the opposite bottom points 45mm apart from the center of capacitor, the pressure strength is applied with a specified jig at the center of substrate so that the substrate may bend by 1mm as illustrated. Then, there shall be found no remarkable abnormality on the capacitor terminals.	

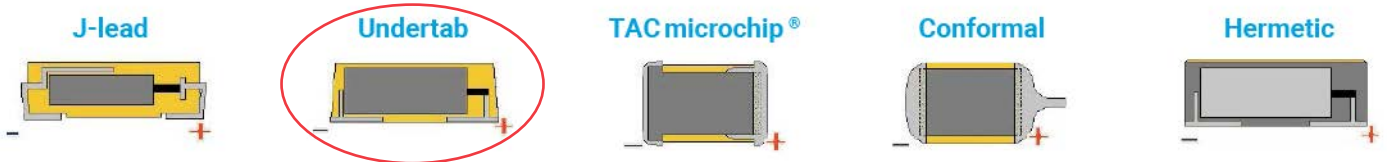
\*2 LZT and AXE: Rated temperature 60°C, Surge and Endurance test temperature 60°C

# Conductive Polymer, Miniature, Undertab Solid Electrolytic Chip Capacitors

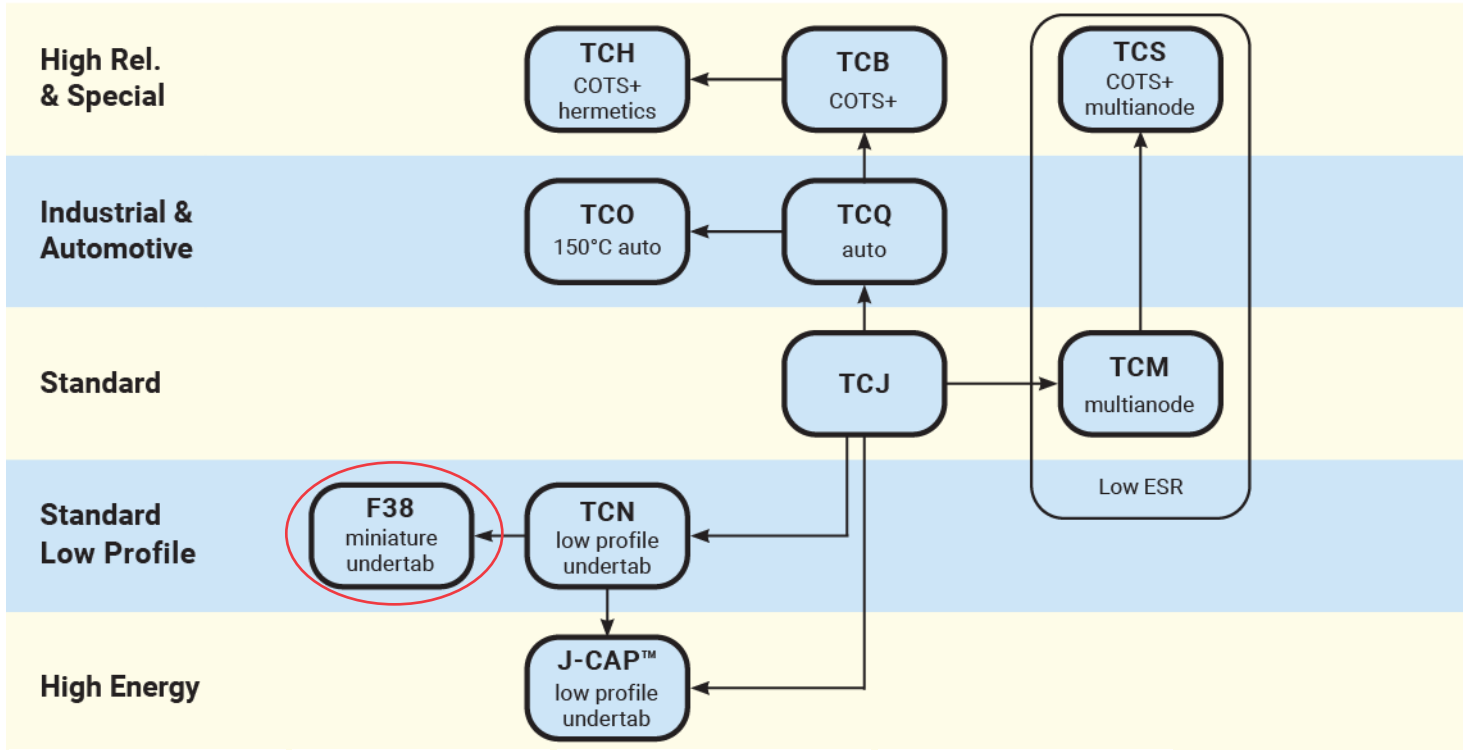
## SOLID ELECTROLYTIC CAPACITOR ROADMAP



## FIVE CAPACITOR CONSTRUCTION STYLES



## SERIES LINE UP : Conductive Polymer



- |                             |                            |                                 |                                |                          |
|-----------------------------|----------------------------|---------------------------------|--------------------------------|--------------------------|
| Архангельск (8182)63-90-72  | Ижевск (3412)26-03-58      | Магнитогорск (3519)55-03-13     | Пермь (342)205-81-47           | Сургут (3462)77-98-35    |
| Астана (7172)727-132        | Иркутск (395)279-98-46     | Москва (495)268-04-70           | Ростов-на-Дону (863)308-18-15  | Тверь (4822)63-31-35     |
| Астрахань (8512)99-46-04    | Казань (843)206-01-48      | Мурманск (8152)59-64-93         | Рязань (4912)46-61-64          | Томск (3822)98-41-53     |
| Барнаул (3852)73-04-60      | Калининград (4012)72-03-81 | Набережные Челны (8552)20-53-41 | Самара (846)206-03-16          | Тула (4872)74-02-29      |
| Белгород (4722)40-23-64     | Калуга (4842)92-23-67      | Нижний Новгород (831)429-08-12  | Санкт-Петербург (812)309-46-40 | Тюмень (3452)66-21-18    |
| Брянск (4832)59-03-52       | Кемерово (3842)65-04-62    | Новокузнецк (3843)20-46-81      | Саратов (845)249-38-78         | Ульяновск (8422)24-23-59 |
| Владивосток (423)249-28-31  | Киров (8332)68-02-04       | Новосибирск (383)227-86-73      | Севастополь (8692)22-31-93     | Уфа (347)229-48-12       |
| Волгоград (844)278-03-48    | Краснодар (861)203-40-90   | Омск (3812)21-46-40             | Симферополь (3652)67-13-56     | Хабаровск (4212)92-98-04 |
| Вологда (8172)26-41-59      | Красноярск (391)204-63-61  | Орел (4862)44-53-42             | Смоленск (4812)29-41-54        | Челябинск (351)202-03-61 |
| Воронеж (473)204-51-73      | Курск (4712)77-13-04       | Оренбург (3532)37-68-04         | Сочи (862)225-72-31            | Череповец (8202)49-02-64 |
| Екатеринбург (343)384-55-89 | Липецк (4742)52-20-81      | Пенза (8412)22-31-16            | Ставрополь (8652)20-65-13      | Ярославль (4852)69-52-93 |
| Иваново (4932)77-34-06      | Киргизия (996)312-96-26-47 | Россия (495)268-04-70           | Казахстан (772)734-952-31      |                          |