

endrich news

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**Frohe Weihnachten
und ein glückliches
Neues Jahr**

**Merry Christmas and
a Happy New Year**

**Joyeux Noël et
une bonne et heureuse Année**

**Feliz Navidad y
un próspero Año Nuevo**

Feliz Natal e próspero Ano Novo

Buon Natale e felice Anno Nuovo

**wish you and your family
the management and staff of Endrich and Novitronic companies**

TIME MACHINE II – DELIVERS INSTANT CUSTOMIZED OSCILLATOR SAMPLES



The **Time Machine II™** is a portable programmer for MEMS oscillators. This programmer instantly customizes MEMS oscillators enabling engineers to accelerate design time and optimize system performance.

“Legacy quartz oscillators cannot be customized easily; samples are delivered after 15 to 20 weeks and the payment of an NRE fee,” said Piyush Sevalia, executive vice president of marketing at SiTime.

“With SiTime’s Time Machine II programmer, designers can instantly program SiTime’s MEMS oscillators to get exactly what they need, when they need it. Designers can now dramatically accelerate their development and use unique programmable features to improve system performance. This is another example of how SiTime’s innovation is transforming the \$5 billion timing industry.

” With the Time Machine II programmer, engineers can configure the frequency, voltage, stability, and special features of MEMS oscillators. Features such as spread spectrum and adjustable rise and fall times are extremely useful to designers in the last stages of their development, as they help to improve EMI performance without lengthy board changes.

FEATURES/ADVANTAGES

The Time Machine II MEMS oscillator programmer delivers the following features and benefits:

- » Complete solution for best out-of-box experience
- » Smallest (70 mm diameter) programmer can be used in any lab or office environment
- » Add-on socket cards support all popular QFN and SOT23 oscillator packages
- » Blank field programmable oscillator starter packs included
- » One click programming software
- » USB powered, eliminates need for external power supply
- » Tutorial available on SiTime WEB-Page
- » Hardware upgradable for future products
- » Auto software update

SiT6100DK Software



KIT CONTENTS/DELIVERY

- » SiT6100DK MEMS oscillator programmer & installation software (USB drive)
- » 3 socket cards, USB cable, tweezers
- » Sample field programmable device packs
- » For support you'll find 2 video tutorials below:
http://www.sitime.com/support/time-machine-oscillator-programmer#magictabs_M82U8_5

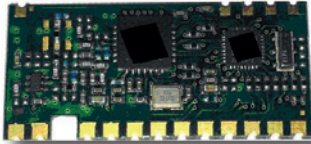
For more support and information please contact us!

TIME MACHINE II – SOFTWARE

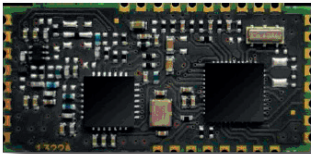
When creating the oscillator specification the unique part number will be generated simultaneously and the program history is recorded by the software.

From	To	Operation	Operation Result	Tracking ID	PartNumber
Select a date 15	Select a date 15	All	All	All	
DateTime	Operation	Operation Result	TrackingID	Part No.	
6/26/2014 4:15:06 PM	Program	Pass	Tracking ID was not set.	SiT8920AM-23-33E-29.997000	
6/26/2014 4:14:28 PM	Verify	Pass	Tracking ID was not set.	SiT8920AM-23-33E-29.997000	
6/26/2014 4:14:26 PM	Program	Pass	Tracking ID was not set.	SiT8920AM-23-33E-29.997000	
6/26/2014 4:13:14 PM	Verify	Pass	Tracking ID was not set.	SiT8920AM-23-33E-29.997000	
6/26/2014 4:13:13 PM	Program	Pass	Tracking ID was not set.	SiT8920AM-23-33E-29.997000	
6/26/2014 4:12:53 PM	Verify	Pass	Tracking ID was not set.	SiT8920AM-23-33E-29.997000	

TRANSCEIVER FOR LONG DISTANCE COMMUNICATION WITH “LoRa SSM”



XTR-8LR10



XTR-8LR100

XTR-8LR10 and XTR-8LR100 are half duplex transceiver for long range radio communication based on a patented “LoRa SSM” modulation spread spectrum technique, providing high interference immunity, high sensitivity and very low power consumption. The Semtech solution allows much longer distances compared to the classical ISM band radio front-ends with several km of range.

Compared to standard modulation techniques, XTR-8LR10/XTR-8LR100 improves up to 20 dB the receiver sensitivity, allowing long distances by using low power in transmission and low consumption, inexpensive power supply circuits and low cost batteries. The module provides configurable spreading sequences and different signal bandwidth options. Also error correction schemes can be set. This enables the user to choose the perfect balance between range, interference robustness and data rate for multiple wireless applications.

LoRa® is the physical layer or the wireless modulation utilized to create the long range communication link. Many legacy wireless systems use frequency shifting keying (FSK) modulation as the physical layer because it is a very efficient modulation for achieving low power. LoRa® is based on chirp spread spectrum modulation, which maintains the same low power characteristics as FSK modulation but significantly increases the communication range. Chirp spread spectrum has been used in military and space communication for decades due to the long communication distances that can be achieved and robustness to interference, but LoRa® is the first low cost implementation for commercial usage.

Transceiver works in 868~868,6 MHz (25 mW version 8LR10), 869,4~869,65 MHz (25 mW, version 8LR10), 869,70~870,00 MHz (25 mW, version 8LR10), 869,4~869,65 MHz (100 mW, version 8LR100) European band with possibility to set the channel width. The radio-modem with

UART input interface, working on data packages (max. size 255 bytes). It can handle addressing schemes for point-to-multipoint star networks. Main radio parameters might be set up smoothly via command mode procedure, offering the user flexibility and multiple solutions to the many problems involved in the field.

MAIN FEATURES

- » No encoding or preamble requested
- » AT command mode for set up of parameters
- » HyperTerminal compatible
- » UART interface: data rate 9600, 19200, 115200 bps
- » Sensitivity: -118 dBm ... -144 dBm
- » Operating voltage: 3.3V

XTR-8LR100

- » Channels 7 max.
- » Small form factor: 37 mm×18 mm×2.2 mm
- » Emitted power: max. 100 mW
- » Standard distance: 8000 m

XTR-8LR10

- » Channels 3 max.
- » Small form factor: 33.5 mm×15.4 mm×2.4 mm
- » Emitted power: max. 20 mW
- » Standard distance: 6000 m

APPLICATIONS

- » Home and building automation
- » SCADA
- » Irrigation control
- » Energy monitoring
- » Automatic Meter Reading
- » Alarm equipment
- » Industrial sensors

Available on request is a DEMO-BOARD_XTR8LR100, an evaluation board for testing the XTR-8LR100/XTR-8LR10 transceiver performance. The board can be supplied with an external supply or with 4 AA batteries for stand-alone tests. Included also a stylus antenna working in 868MHz bandwidth connectable to the SMA connector, in this setting you can realize a budget-link test through the diagnostics led. For indoor test the demoboard is equipped of an USB connector simulating the COM port realized with CIFTDI1235-C and as already mentioned with an SMA connector for radio input/output for make easier the equipment connection.

ADVANCED LITHIUM PRIMARY BATTERY – FR03 AAA & FR6 AA



EVE offer new cylindrical lithium iron disulfide (Li-FeS₂) batteries. Cylindrical lithium iron disulfide batteries have Lithium for the anode, iron disulfide for the cathode, and a lithium salt in an organic solvent blend as the electrolyte. They deliver a voltage of 1.5V and are designed for superior performance. They are compatible in any application using 1.5V battery types AA and AAA. Some of the advantages of those batteries are: work at low temperature extremes where other types will not, excellent performance even after 15 year storage at ambient conditions and longer service than other primary battery types.

MAIN FEATURES

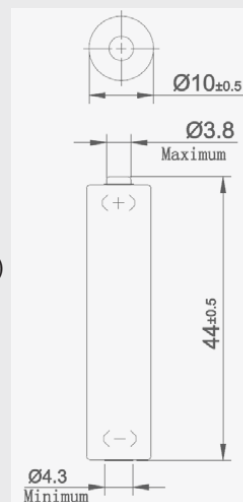
- » Direct drop-in compatibility in applications using 1.5 V “AA” and “AAA” battery sizes
- » Far greater power than other battery types
- » Provides longer service than other battery types in moderate to heavy drain applications
- » Greater service advantage over other battery types at low temperature extremes operating at -40°C
- » Higher operating voltage and flatter discharge curve than other 1.5V battery types
- » Superior leakage resistance compared to other 1.5V battery types.
- » Outstanding service maintenance when stored at ambient conditions.
- » Considerably lighter than other 1.5V battery types
- » Good service maintenance after high temperature storage up to +60°C.
- » No added mercury, cadmium, or lead.

APPLICATIONS

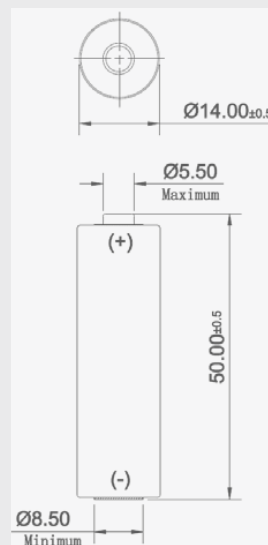
- » Wireless mouse or keyboard
- » Digital cameras
- » Medical equipment
- » GPS
- » Electronic dictionaries
- » Calculators
- » Measuring instrument ,
- » Digital video
- » Radio transceiver
- » Electronic clocks
- » Sensors

DIMENSIONS (mm)

Li-FeS₂ battery
FR03 (AAA-type)

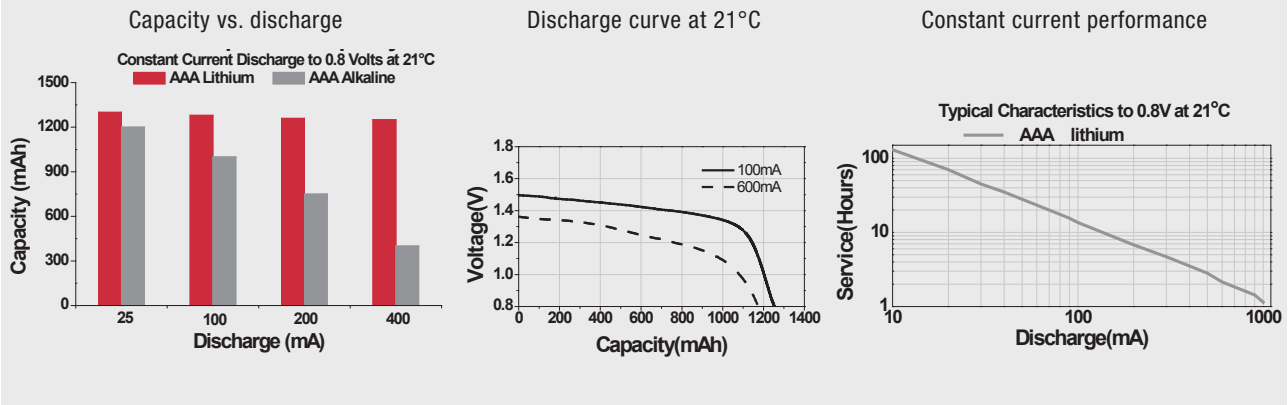


Li-FeS₂ battery
FR6 (AA-type)

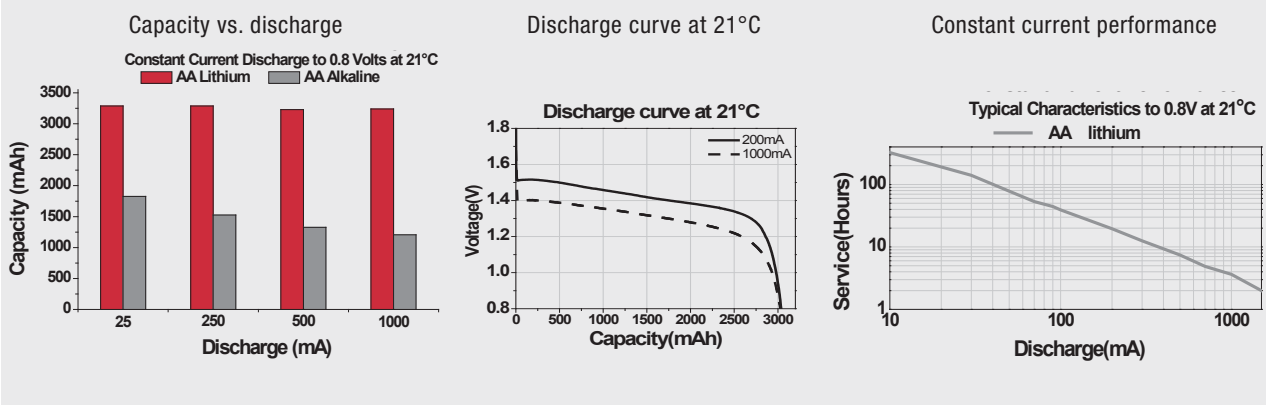


ADVANCED LITHIUM PRIMARY BATTERY – FR03 AAA & FR6 AA

CHARACTERISTICS FOR AAA-TYPE FR03



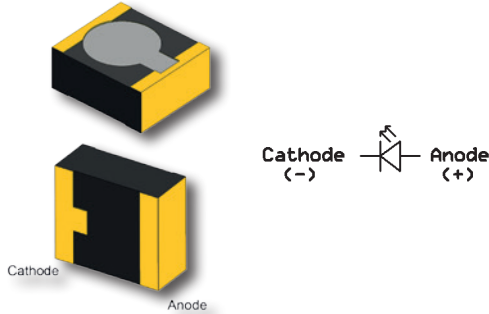
CHARACTERISTICS FOR AA-TYPE FR6



SPECIFICATIONS

PARAMETER	Li-FeS ₂ battery FR03	Li-FeS ₂ battery FR6
Nominal capacity (100 mA, 0.8 V off)	≥1100 mAh	≥2900 mAh
Nominal voltage	1,5V	1,5V
Max. constant current	1500 mA	2000 mA
Max. pulse current (2 sec on / 8 sec off)	2000 mA	3000 mA
Operating temperature range	-40°C ... +60°C	-40°C ... +60°C
Weight	ca.7 g	ca.15 g
Typ. IR	≤400 mΩ	≤200 mΩ

INFRARED LED HIRM2219T09-E0 – MID POWER TYPE



The **HIRM2219T09-E0** is a GaAlAs infrared LED in a small SMD reflector package. The device has a peak wavelength of 850 nm LED spectrally matched with phototransistor or photodiode with or without daylight filter.

FEATURES

- » Small double-end SMD package 2.2×1.95×0.9 mm³
- » Viewing angle: ±20 °
- » High radiant intensity
- » High reliability
- » Good spectral matching to Si photo detector
- » RoHS compliant

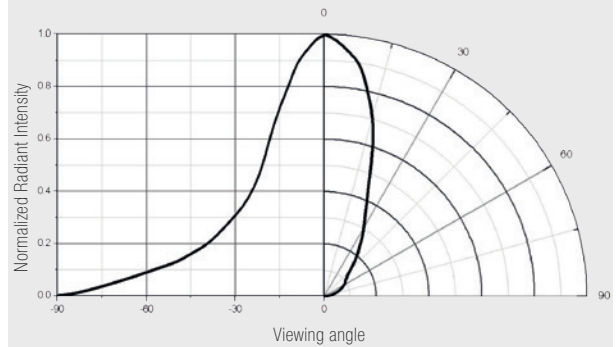
APPLICATIONS

- » Infrared sensor

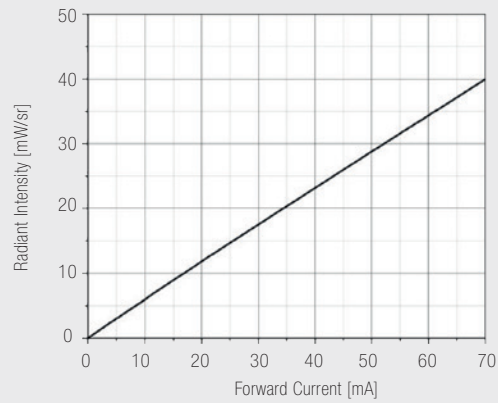
ABSOLUTE MAXIMUM RATING

PARAMETER	VALUE
Continuous forward current I_F [mA]	70
Peak forward current I_{FP} [A] (pulse≤100μs, duty≤1%)	0.7
Reverse voltage V_R [V]	5
Operating temperature T_{OPR} [°C]	-40 ... +85
Storage temperature T_{STG} [°C]	-40 ... +100
Thermal resistance (junction to ambient) $R_{th(j-a)}$ [°C/W]	370
Power dissipation P_D [mW]	140

ANGULAR DISPLACEMENT



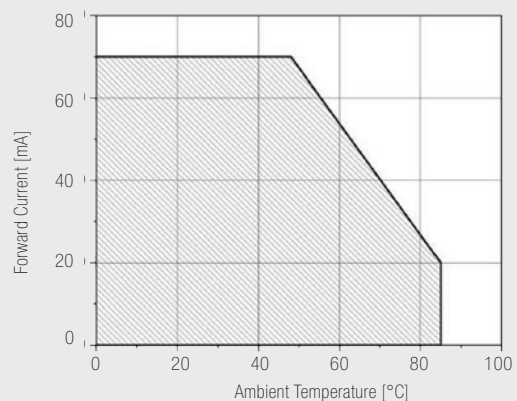
RADIANT INTENSITY VS. FORWARD CURRENT



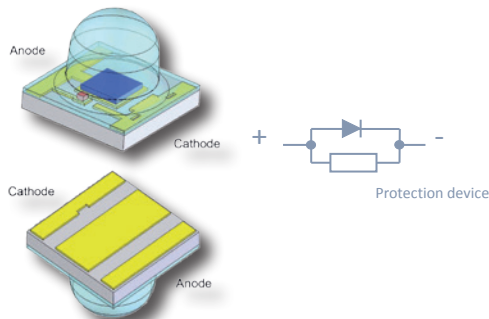
ELECTRO-OPTICAL SPECIFICATIONS

PARAMETER	VALUE		
	min.	typ.	max.
Radiant Intensity @ $I_F=70mA$ I_b [mW/sr]	-	40	-
Radiant Intensity @ $I_F=100mA$ I_b [mW/sr] $t_p=20ms$	35	55	-
Peak wavelength @ $I_F=20mA$ λ_p [nm]	-	850	-
Spectral band width @ $I_F=20mA$ $\Delta\lambda$ [nm]	-	40	-
Angle of Half Intensity @ $I_F=20mA$ $\theta_{1/2}$ [deg]	-	±20	-
Forward voltage @ $I_F=20mA$ V_F [V]	1.25	1.45	1.7
Forward voltage @ $I_F=70mA$ V_F [V]	1.40	1.60	2.0
Reverse current @ $V_R=5V$ I_R [μA]	-	-	10

FORWARD CURRENT VS. AMBIENT TEMPERATURE



INFRARED LED HIRK3535030-G5 – HIGH POWER TYPE



The **HIRK3535030-G5** is a GaAlAs infrared LED in a miniature SMD package with ceramic substrate. The device has a peak wavelength of 850 nm LED spectrally matched with phototransistor or photodiode with or without daylight filter.

FEATURES

- » High efficiency
- » Viewing angle: $\pm 32.5^\circ$
- » Thermal resistance (junction to lead) 20°C/W
- » High reliability
- » Good spectral matching to Si photo detector
- » Miniature SMD package $3.45\text{ mm} \times 3.45\text{ mm} \times 3.0\text{ mm}$
- » RoHS compliant

APPLICATIONS

- » Infrared sensor

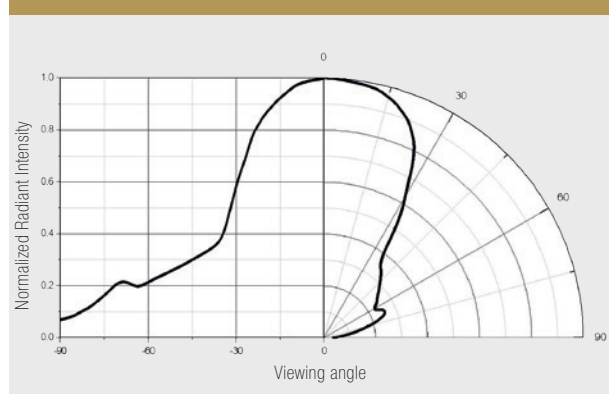
ABSOLUTE MAXIMUM RATING

PARAMETER	VALUE
Continuous forward current I_F [mA]	1000
Reverse voltage V_R [V]	5
Operating temperature T_{OPR} [$^\circ\text{C}$]	-40 ... +85
Storage temperature T_{STG} [$^\circ\text{C}$]	-40 ... +100
Soldering temperature T_{SOL} (soldering time 5s) [$^\circ\text{C}$]	260
Therm. resistance (junction to lead) $R_{th(j-l)}$ [$^\circ\text{C/W}$]	20
Power dissipation P_D [W]	3

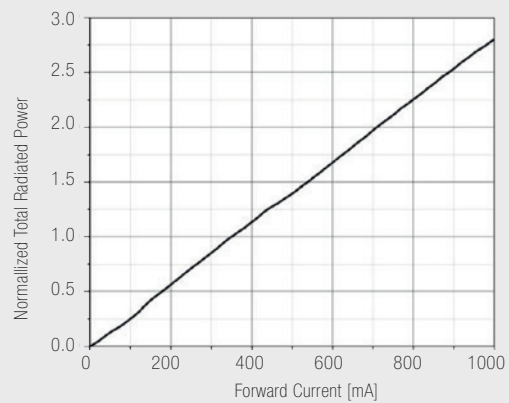
ELECTRO-OPTICAL SPECIFICATIONS

PARAMETER	VALUE		
	min.	typ.	max.
Total radiated power @ $I_F=350\text{mA}$ P_O [mW]	-	250	-
Total radiated power @ $I_F=1000\text{mA}$ P_O [mW]	560	680	800
Peak wavelength @ $I_F=350\text{mA}$ λ_p [nm]	840	850	870
Spectral bandwidth @ $I_F=350\text{mA}$ $\Delta\lambda$ [nm]	-	30	-
Angle of Half Intensity @ $I_F=350\text{mA}$ $\theta_{1/2}$ [deg]	-	± 32.5	-
Forward voltage @ $I_F=350\text{mA}$ V_F [V]	1.45	1.7	2.2
Forward voltage @ $I_F=1000\text{mA}$ V_F [V]	1.75	2.3	3.0
Reverse current @ $V_R=5\text{V}$ I_R [μA]	-	-	10

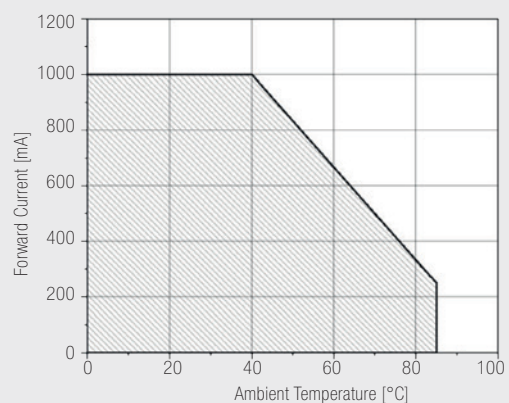
ANGULAR DISPLACEMENT



TOTAL RADIATED POWER VS. FORWARD CURRENT










FORWARD CURRENT VS. AMBIENT TEMPERATURE



BOSAN SMD MAGNETIC TRANSDUCERS

Our Korean supplier for SMD magnetic transducers **BOSAN Hitech Co. Ltd.** BOSAN is specialized in SMD magnetic transducers. With just a few different models existing, the majority of industrial needs in acoustic signaling can be covered, such as loud warning sound or soft confirmation beep. The manufacturing of BOSAN sounders is fully automatic. Company BOSAN is certified acc. to ISO 9001. A certification according to Automotive standard is under consideration. All BOSAN transducers are non-washable magnetic SMD type, suitable for reflow soldering. The parts come in tape-on-reel packagings, quantity is depending on particular model.

SELECTION GUIDE

STYLE/DIMENSIONS [mm]	MODEL NUMBER	OPERATING VOLTAGE [V]	DCR [Ω]	MAX. CURRENT [mA]	FREQUENCY [Hz]	MIN. SPL [dB]	TEMPERATURE RANGE [°C]	HOUSING MATERIAL / SOUND EXIT	PACKAGING
 5.0×5.0×2.0	BST-5523SA	3.0 (2.0...4.0)	12	100	4000	78	T _{OP} : -30...+70 T _{STG} : -45...+85	Nylon #46/ at the top	T&R / 2,000 pcs. per reel
 5.0×5.0×3.0	BST-5533S	3.0 (2.0...4.0)	12	100	4000	78	T _{OP} : -30...+70 T _{STG} : -45...+85	Nylon #46/ at the top	T&R / 2,000 pcs. per reel
 8.5×8.5×3.0	BST-0833A	3.6 (2.5...4.5)	16	100	2700	88	T _{OP} : -30...+70 T _{STG} : -40...+85	Nylon #46/ sideways	T&R / 1,000 pcs. per reel
 8.5×8.5×3.0	BST-0833D	3.6 (2.5...4.5)	16	100	3000	85	T _{OP} : -30...+70 T _{STG} : -40...+85	Nylon #46/ sideways	T&R / 1,000 pcs. per reel
 8.5×8.5×3.0	BST-0835A	5.0 (4.0...6.0)	30	100	2700	90	T _{OP} : -30...+75 T _{STG} : -40...+85	Nylon #46/ sideways	T&R / 1,000 pcs. per reel
 8.5×8.5×4.0	BST-0843A	3.6 (2.5...4.0)	16	100	2700	88	T _{OP} : -30...+70 T _{STG} : -40...+85	Nylon #46/ sideways	T&R / 1,000 pcs. per reel
 8.5×8.5×4.0	BST-0845A	5.0 (4.0...6.0)	30	80	2700	90	T _{OP} : -20...+60 T _{STG} : -40...+85	Nylon #46/ sideways	T&R / 1,000 pcs. per reel

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