



## SMCG Plastic-Encapsulate Diodes

### US5A THRU US5M High Efficient Rectifier Diodes

#### Features

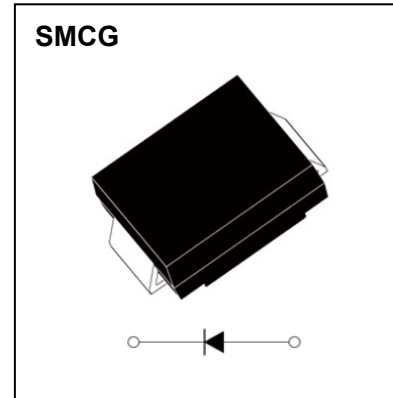
- $I_{F(AV)}$  5A
- $V_{RRM}$  50V-1000V
- High surge current capability
- Polarity: Color band denotes cathode

#### Applications

- Rectifier

#### Marking

- US5X  
X : From A To M



#### Limiting Values(Absolute Maximum Rating)

| Item   | Symbol         | Unit             | Test Conditions   | US5        |     |     |     |     |     |      |
|--|----------------|------------------|---|------------|-----|-----|-----|-----|-----|------|
|  |                |                  |   | A          | B   | D   | G   | J   | K   | M    |
| Repetitive Peak Reverse Voltage                  | $V_{RRM}$      | V                |   | 50         | 100 | 200 | 400 | 600 | 800 | 1000 |
| Maximum RMS Voltage                              | $V_{RMS}$      | V                |   | 35         | 70  | 140 | 280 | 420 | 560 | 700  |
| Average Forward Current                          | $I_{F(AV)}$    | A                | 60Hz Half-sine wave,<br>Resistance load                 | 5.0        |     |     |     |     |     |      |
| Surge(Non-repetitive)Forward Current             | $I_{FSM}$      | A                | 60Hz Half-sine wave,<br>1 cycle, $T_a=25^\circ\text{C}$ | 150        |     |     |     |     |     |      |
| Operation Junction and Storage Temperature Range | $T_J, T_{STG}$ | $^\circ\text{C}$ |   | -55 ~ +150 |     |     |     |     |     |      |

#### Electrical Characteristics ( $T=25^\circ\text{C}$ Unless otherwise specified)

| Item                           | Symbol           | Unit                      | Test Condition  | US5                     |    |   |     |     |    |   |
|--------------------------------|------------------|---------------------------|---|-------------------------|----|---|-----|-----|----|---|
|                                |                  |                           |   | A                       | B  | D | G   | J   | K  | M |
| Peak Forward Voltage           | $V_F$            | V                         | $I_F=5.0\text{A}$   | 1.0                     |    |   | 1.3 | 1.7 |    |   |
| Maximum reverse recovery time  | $t_{rr}$         | ns                        | $I_F=0.5\text{A}, I_R=1.0\text{A}, I_{rr}=0.25\text{A}$   | 50                      |    |   |     | 75  |    |   |
| Peak Reverse Current           | $I_{RRM1}$       | $\mu\text{A}$             | $V_{RM}=V_{RRM}$  | $T_a=25^\circ\text{C}$  |    |   |     |     |    |   |
|                                | $I_{RRM2}$       |                           |   | $T_a=125^\circ\text{C}$ |    |   |     |     |    |   |
| Thermal Resistance(Typical)    | $R_{\theta J-A}$ | $^\circ\text{C}/\text{W}$ | Between junction and ambient                              |                         | 95 |   |     |     |    |   |
|                                | $R_{\theta J-L}$ |                           | Between junction and terminal                             |                         | 4  |   |     |     |    |   |
| Junction Capacitance (Typical) | $C_j$            | pF                        | Measured at 1MHZ and Applied Reverse Voltage of 4.0 V.D.C |                         | 78 |   | 42  | 30  | 45 |   |

#### Notes:

Thermal resistance from junction to ambient and from junction to lead mounted on 1" x 1"(25.4mm x 25.4mm) FR4 PCB, double sided copper, with minimum pad layout

# Typical Characteristics

FIG.1: FORWARD CURRENT DERATING CURVE

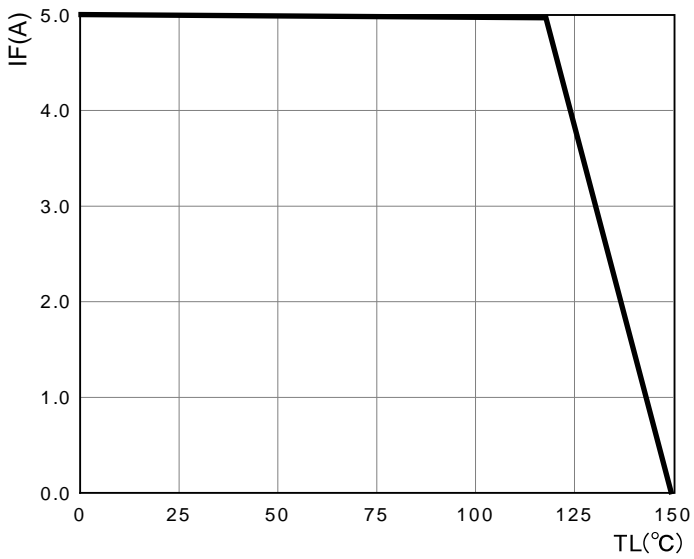
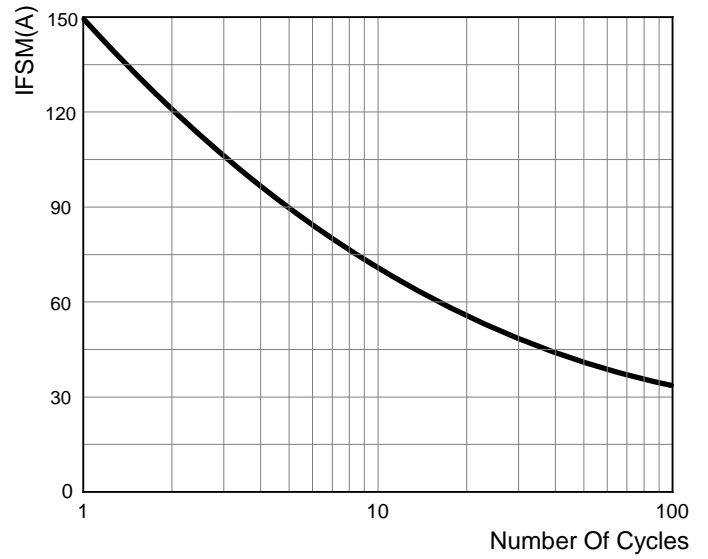
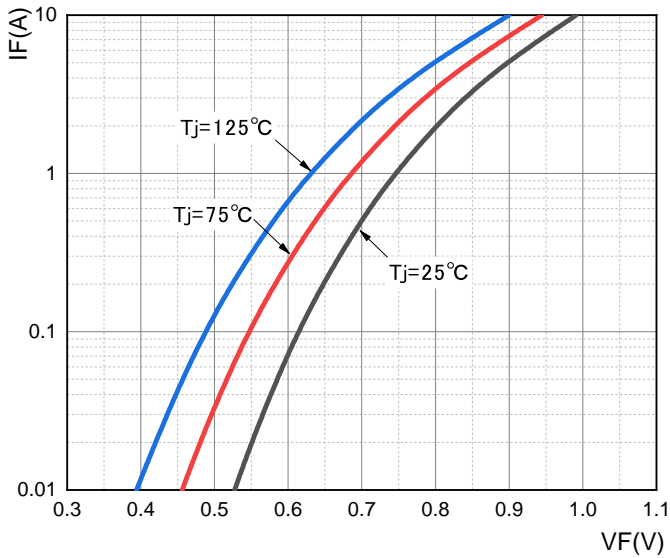


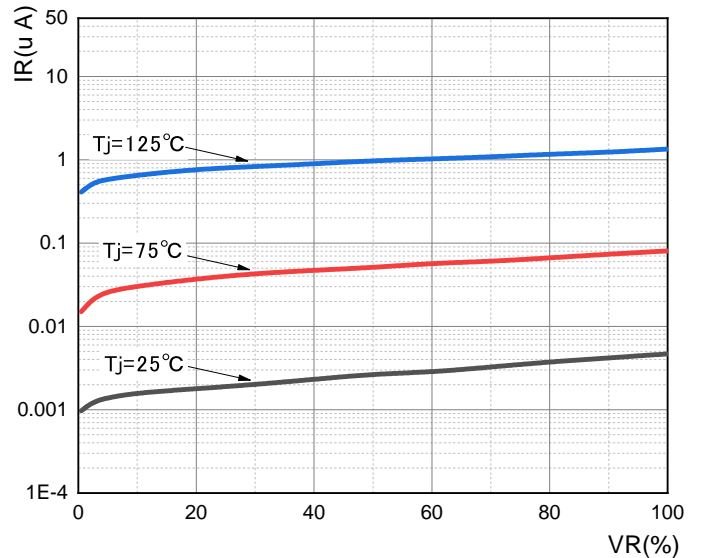
FIG 2: MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT



US5A-US5D  
FIG.3 : TYPICAL FORWARD CHARACTERISTICS



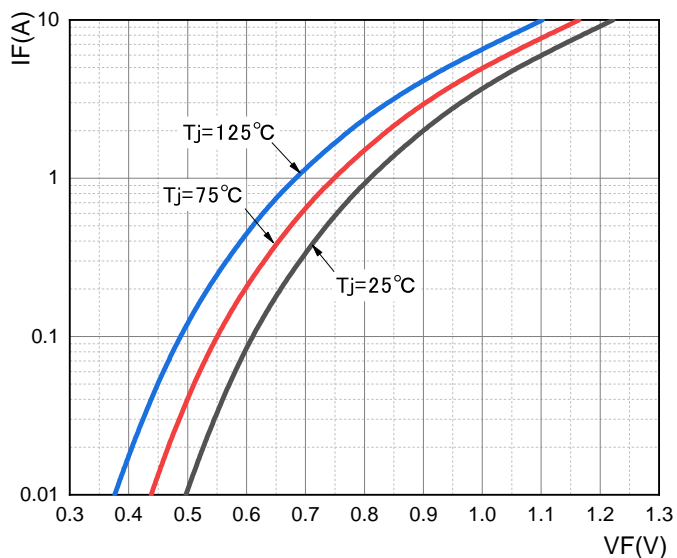
US5A-US5D  
FIG.4: TYPICAL REVERSE CHARACTERISTICS



# Typical Characteristics

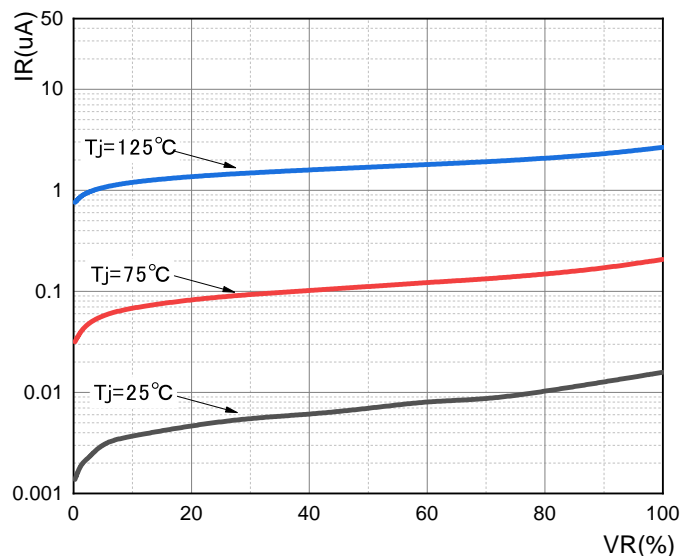
US5G

FIG.5 : TYPICAL FORWARD CHARACTERISTICS



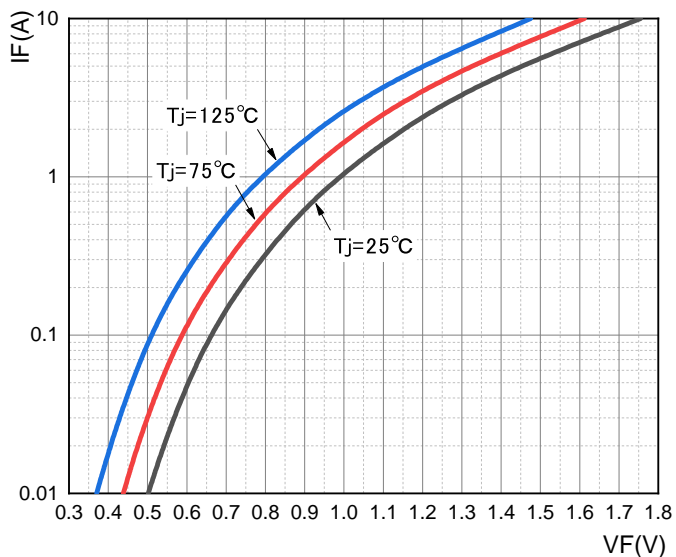
US5G

FIG.6: TYPICAL REVERSE CHARACTERISTICS



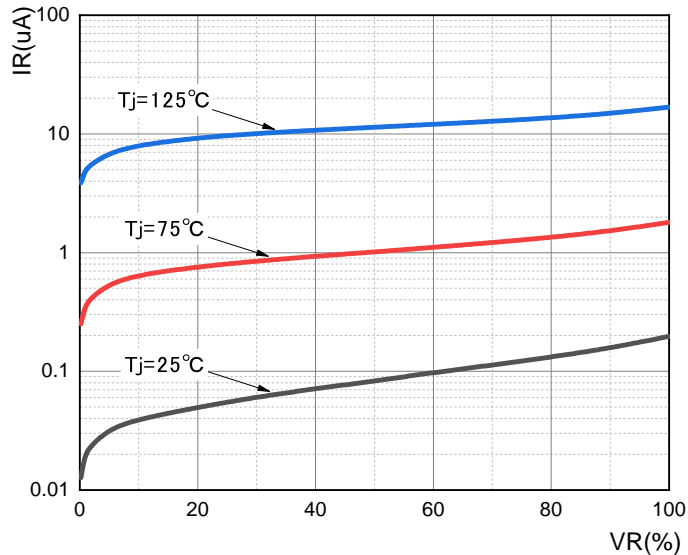
US5J

FIG.7 : TYPICAL FORWARD CHARACTERISTICS



US5J

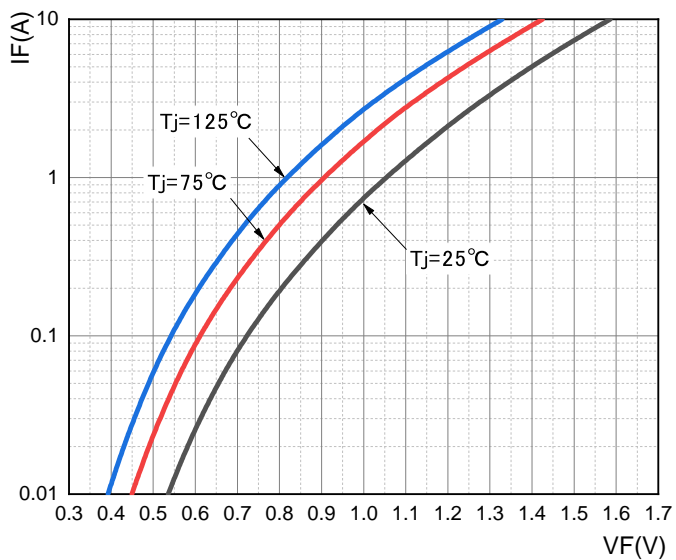
FIG.8: TYPICAL REVERSE CHARACTERISTICS



# Typical Characteristics

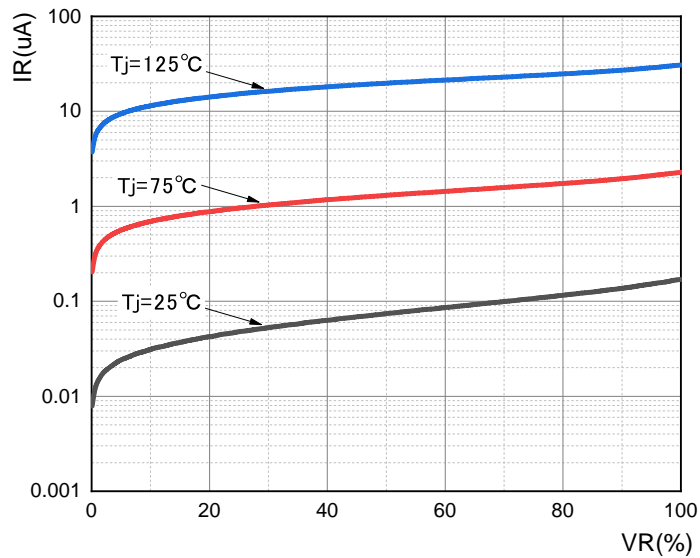
US5K-US5M

FIG.9 : TYPICAL FORWARD CHARACTERISTICS

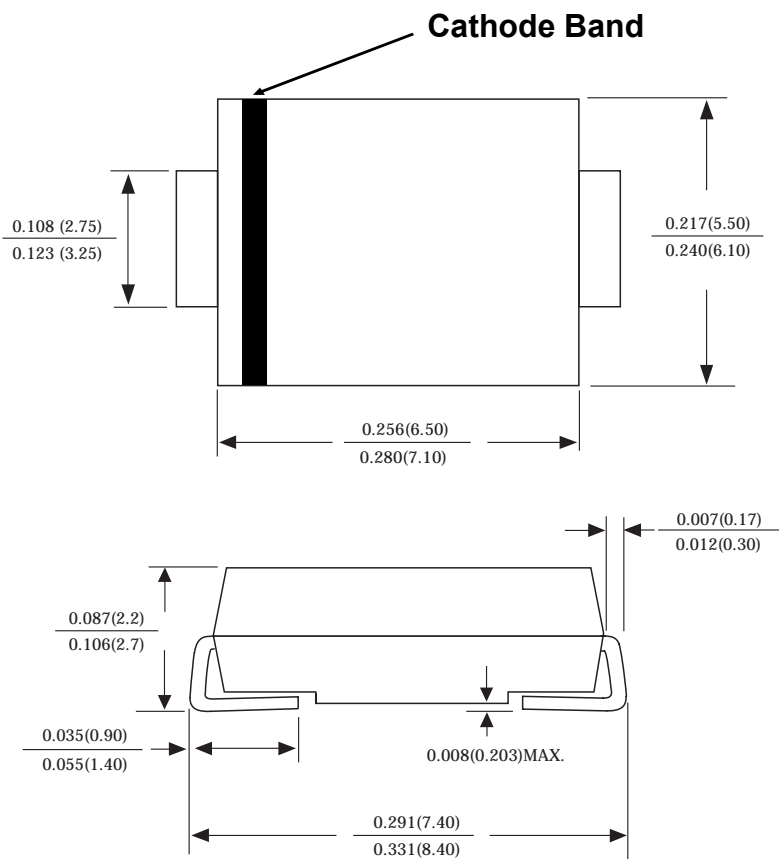


US5K-US5M

FIG.10 : TYPICAL REVERSE CHARACTERISTICS

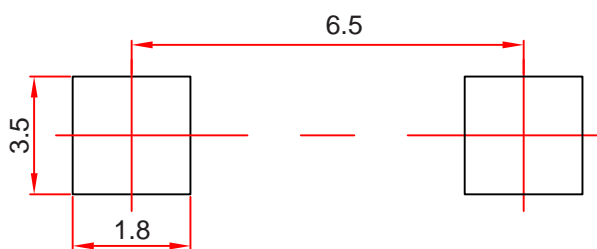


## SMCG Package Outline Dimensions



Dimensions in inches and (millimeters)

## SMCG Suggested Pad Layout



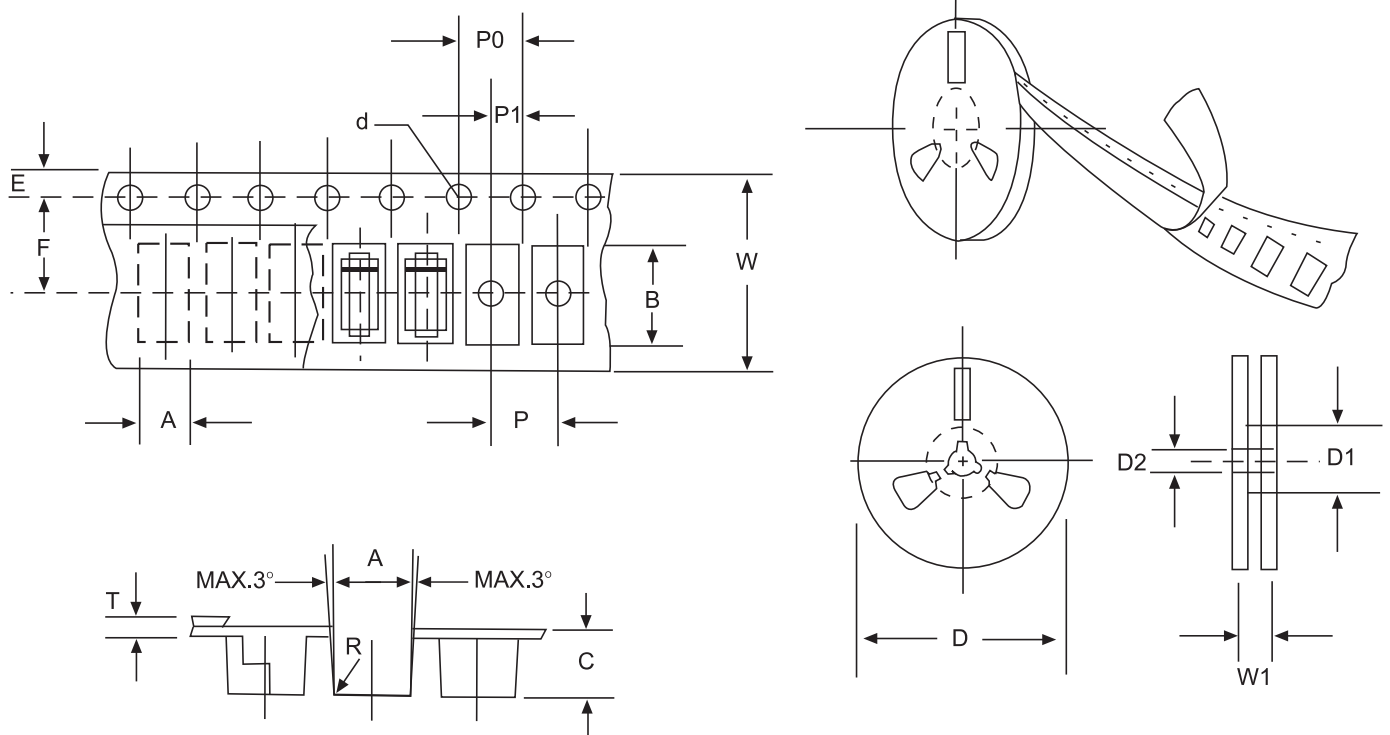
### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

### NOTICE

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# Reel Taping Specifications For Surface Mount Devices–SMCG



**FIG: CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING**

| ITEM                   | SYMBOL | SMCG mm(inch)             |
|------------------------|--------|---------------------------|
| Carrier width          | A      | 6.05±0.1(0.238±0.004)     |
| Carrier length         | B      | 8.31±0.1(0.327±0.004)     |
| Carrier depth          | C      | 2.70±0.1(0.106±0.004)     |
| Sprocket hole          | d      | 1.55±0.05(0.061±0.002)    |
| Reel outside diameter  | D      | 330±2.0(13±0.079)         |
| Reel inner diameter    | D1     | 75 ±1.0 ( 2.95 ±0.039)    |
| Feed hole diameter     | D2     | 13±0.5(0.512±0.020)       |
| Sprocket hole position | E      | 1.75 ±0.1(0.069±0.004)    |
| Punch hole position    | F      | 7.65±0.05(0.301±0.002)    |
| Punch hole pitch       | P      | 8.0±0.1(0.315±0.004)      |
| Sprocket hole pitch    | P0     | 4.0±0.1(0.157±0.004)      |
| Embossment center      | P1     | 2.0±0.1(0.079±0.004)      |
| Total tape thickness   | T      | 0.3 ± 0.1 ( 0.012 ±0.004) |
| Tape width             | W      | 16.0±0.2(0.630±0.008)     |
| Reel width             | W1     | 24.0±2.0(0.945±0.079)     |

NOTE: Devices are packed in accordance with EIA standard RS-481-A and specification given above.