

# Transmission Control Module (TCM) I/O Signal

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

## 5. Transmission Control Module (TCM) I/O Signal

### A: ELECTRICAL SPECIFICATION

|  |               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |    |  |  |    |    |  |  |    |    |    |    |    |    |  |  |    |    |  |  |    |    |    |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    |    |    |
|--|---------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|---|----|----|--|--|----|----|--|--|----|----|----|----|----|----|--|--|----|----|--|--|----|----|----|----|---|---|---|---|---|---|---|----|----|----|----|----|----|----|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|--|----|----|----|
| TO <b>B54</b>  | TO <b>B55</b> |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |    |  |  |    |    |  |  |    |    |    |    |    |    |  |  |    |    |  |  |    |    |    |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    |    |    |
| <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr> <tr><td>19</td><td>18</td><td>17</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td></tr> <tr><td>27</td><td>26</td><td></td><td></td><td>25</td><td>24</td><td></td><td></td><td>23</td><td>22</td><td>21</td><td>20</td></tr> <tr><td>35</td><td>34</td><td></td><td></td><td>33</td><td>32</td><td></td><td></td><td>31</td><td>30</td><td>29</td><td>28</td></tr> </table> | 7             | 6  | 5  | 4  | 3  | 2  | 1  | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 27 | 26 |  |  | 25 | 24 |  |  | 23 | 22 | 21 | 20 | 35 | 34 |  |  | 33 | 32 |  |  | 31 | 30 | 29 | 28 | <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr> <tr><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td></tr> <tr><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr> <tr><td>35</td><td>34</td><td>33</td><td>32</td><td>31</td><td></td><td></td><td></td><td>30</td><td>29</td><td>28</td></tr> </table> | 6 | 5 | 4 | 3 | 2 | 1 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 35 | 34 | 33 | 32 | 31 |  |  |  | 30 | 29 | 28 |
| 7  | 6             | 5  | 4  | 3  | 2  | 1  |    |    |    |    |    |    |    |    |    |    |    |   |   |    |    |  |  |    |    |  |  |    |    |    |    |    |    |  |  |    |    |  |  |    |    |    |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    |    |    |
| 19   | 18            | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9  | 8  |    |    |    |    |    |    |   |   |    |    |  |  |    |    |  |  |    |    |    |    |    |    |  |  |    |    |  |  |    |    |    |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    |    |    |
| 27   | 26            |    |    | 25 | 24 |    |    | 23 | 22 | 21 | 20 |    |    |    |    |    |    |   |   |    |    |  |  |    |    |  |  |    |    |    |    |    |    |  |  |    |    |  |  |    |    |    |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    |    |    |
| 35   | 34            |    |    | 33 | 32 |    |    | 31 | 30 | 29 | 28 |    |    |    |    |    |    |   |   |    |    |  |  |    |    |  |  |    |    |    |    |    |    |  |  |    |    |  |  |    |    |    |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    |    |    |
| 6  | 5             | 4  | 3  | 2  | 1  |    |    |    |    |    |    |    |    |    |    |    |    |   |   |    |    |  |  |    |    |  |  |    |    |    |    |    |    |  |  |    |    |  |  |    |    |    |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    |    |    |
| 16   | 15            | 14 | 13 | 12 | 11 | 10 | 9  | 8  | 7  |    |    |    |    |    |    |    |    |   |   |    |    |  |  |    |    |  |  |    |    |    |    |    |    |  |  |    |    |  |  |    |    |    |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    |    |    |
| 27   | 26            | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 |    |    |    |    |    |    |    |   |   |    |    |  |  |    |    |  |  |    |    |    |    |    |    |  |  |    |    |  |  |    |    |    |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    |    |    |
| 35   | 34            | 33 | 32 | 31 |    |    |    | 30 | 29 | 28 |    |    |    |    |    |    |    |   |   |    |    |  |  |    |    |  |  |    |    |    |    |    |    |  |  |    |    |  |  |    |    |    |    |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    |    |    |

AT-04576

| Check with ignition switch ON. |                  |  |                 |                               |             |                |
|--------------------------------|------------------|--|-----------------|-------------------------------|-------------|----------------|
| Item                           |                  | Measured terminal (Connector & Terminal No.) |                 | Measuring condition           | Voltage (V) | Resistance (Ω) |
|                                |                  | Positive terminal                            | Ground terminal |                               |             |                |
| Backup power supply            |                  | (B54) No. 27                                 | Chassis ground  | —                             | 10 — 13     | —              |
|                                |                  | (B54) No. 26                                 | Chassis ground  |                               |             |                |
|                                |                  | (B54) No. 25                                 | Chassis ground  |                               |             |                |
| Ignition power supply          |                  | (B54) No. 1                                  | Chassis ground  | Ignition Switch ON            | 10 — 13     | —              |
|                                |                  | (B54) No. 2                                  | Chassis ground  |                               |             |                |
| Inhibitor switch               | "P" range switch | (B55) No. 14                                 | Chassis ground  | Select lever "P" range        | Less than 1 | —              |
|                                |                  |  |                 | Select lever Except "P" range | 8 or more   | —              |
|                                |                  |  |                 | Select lever "N" range        | Less than 1 | —              |
|                                |                  |  |                 | Select lever Except "N" range | 8 or more   | —              |
|                                | "N" range switch | (B55) No. 11                                 | Chassis ground  | Select lever "R" range        | Less than 1 | —              |
|                                |                  |  |                 | Select lever Except "R" range | 8 or more   | —              |
|                                | "R" range switch | (B55) No. 13                                 | Chassis ground  | Select lever "D" range        | Less than 1 | —              |
|                                |                  |  |                 | Select lever Except "D" range | 8 or more   | —              |

# Transmission Control Module (TCM) I/O Signal

## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

| Check with ignition switch ON.               |  |                 |   |                      |  |
|--|--|-----------------|---|----------------------|--|
| Item   | Measured terminal (Connector & Terminal No.) |                 | Measuring condition   | Voltage (V)          | Resistance (Ω)   |
|  | Positive terminal                            | Ground terminal |   |                      |  |
| ATF temperature sensor                       | (B55) No. 23                                 | (B55) No. 12    | ATF temperature 20°C (68°F)   | 3.5 — 4.3            | 2.5 k — 7.0 k  |
|  |  |                 | ATF temperature 80°C (176°F)  | 1.0 — 2.2            | 300 — 800  |
| ATF temperature sensor ground                | (B55) No. 12                                 | Chassis ground  | —   | 0                    | Less than 1 (When inserting connector)<br>∞ (When disconnecting connector) |
| Rear vehicle speed sensor                    | (B55) No. 26                                 | (B55) No. 15    | 20 km/h (12 MPH)<br>Vehicle speed at least                          | 2 or more (AC range) | —  |
| Rear vehicle speed sensor ground             | (B55) No. 15                                 | Chassis ground  | —   | 0                    | Less than 1 (When inserting connector)<br>∞ (When disconnecting connector) |
| Front vehicle speed sensor                   | (B55) No. 27                                 | (B55) No. 16    | —   | —                    | 450 — 650  |
| Front vehicle speed sensor ground            | (B55) No. 16                                 | Chassis ground  | —   | —                    | —  |
| Torque converter turbine speed sensor        | (B55) No. 1                                  | (B55) No. 2     | Engine idling after warm up ("D" range)                             | 0                    | 450 — 650  |
|  |  |                 | Engine idling after warm up ("N" range)                             | 1 or more (AC range) |  |
| Torque converter turbine speed sensor ground | (B55) No. 2                                  | Chassis ground  | —   | —                    | —  |
| Line pressure linear solenoid                | (B55) No. 4                                  | (B55) No. 3     | Ignition switch ON, throttle fully closed in R range after warm up. | 3.7 — 7.7            | 4.0 — 6.0  |
|  |  |                 | Ignition switch ON, throttle fully open in R range after warm up.   | 1.1 — 5.1            |  |
| Line pressure linear solenoid ground         | (B55) No. 3                                  | Chassis ground  | —   | Less than 1          | Less than 1  |
| Lock-up duty solenoid                        | (B55) No. 6                                  | Chassis ground  | When lock up occurs.  | 10.5 or more         | 2.0 — 4.5  |
|  |  |                 | When lock up is released.   | Less than 1          |  |
| Transfer duty solenoid                       | (B55) No. 5                                  | Chassis ground  | With fuse installed to FWD switch                                   | Less than 1          | 2.0 — 4.5  |
|  |  |                 | With fuse removed from FWD switch (1st gear)                        | 2.0 — 3.0            |  |

# Transmission Control Module (TCM) I/O Signal

## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

| Check with ignition switch ON.           |  |                 |  |              |                |
|--|--|-----------------|--|--------------|----------------|
| Item                                     | Measured terminal (Connector & Terminal No.) |                 | Measuring condition  | Voltage (V)  | Resistance (Ω) |
|  | Positive terminal                            | Ground terminal |  |              |                |
| 2-4 brake duty solenoid                  | (B54) No. 4                                  | Chassis ground  | “P” or “N” range   | 5.0 or more  | 2.0 — 4.5      |
|  |  |                 | 2nd or 4th gear  | Less than 1  |                |
| High clutch duty solenoid                | (B54) No. 6                                  | Chassis ground  | 3rd or 4th gear  | Less than 1  | 2.0 — 4.5      |
|  |  |                 | “P” or “N” range   | 5.0 or more  |                |
| Low clutch duty solenoid                 | (B54) No. 7                                  | Chassis ground  | 1st or 2nd gear  | Less than 1  | 2.0 — 4.5      |
|  |  |                 | “P” or “N” range   | 5.0 or more  |                |
| Low & reverse duty solenoid              | (B54) No. 5                                  | Chassis ground  | Driving at 1st gear on manual mode (15 km/h (9.3 MPH) or more) | 5.0 or more  | 2.0 — 4.5      |
|  |  |                 | Driving at 1st gear on manual mode (15 km/h (9.3 MPH) or more) | 2.5 — 5.0    |                |
| Data link signal (Subaru Select Monitor) | (B54) No. 8                                  | Chassis ground  | —  | —            | —              |
| CAN communication signal (+)             | (B55) No. 18                                 | Chassis ground  | Ignition switch ON   | Pulse signal | —              |
| CAN communication signal (-)             | (B55) No. 17                                 | Chassis ground  | Ignition switch ON   | Pulse signal | —              |
| FWD switch                               | (B54) No. 10                                 | Chassis ground  | Fuse removed   | 10.5 or more | —              |
|  |  |                 | Fuse installed   | 1 or less    | —              |
| Power GND2                               | (B54) No. 20                                 | Chassis ground  | —  | 0            | Less than 1    |
| Power GND1                               | (B54) No. 21                                 | Chassis ground  | —  | 0            | Less than 1    |
| Control GND2                             | (B54) No. 22                                 | Chassis ground  | —  | 0            | Less than 1    |
| Control GND1                             | (B54) No. 23                                 | Chassis ground  | —  | 0            | Less than 1    |
| SPORT shift switch                       | (B54) No. 17                                 | Chassis ground  | Ignition switch ON<br>SPORT shift mode switch is ON            | Less than 1  | —              |
|  |  |                 | Ignition switch ON<br>SPORT shift mode switch is OFF           | 8 or more    | —              |
| SPORT shift UP switch                    | (B54) No. 19                                 | Chassis ground  | Ignition switch ON<br>SPORT shift up switch is ON              | Less than 1  | —              |
|  |  |                 | Ignition switch ON<br>SPORT shift up switch is OFF             | 8 or more    | —              |

# Transmission Control Module (TCM) I/O Signal

## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

| Check with ignition switch ON. |  |                 |   |             |
|--------------------------------|--|-----------------|---|-------------|
| Item                           | Measured terminal (Connector & Terminal No.) |                 | Measuring condition   | Voltage (V) |
|                                | Positive terminal                            | Ground terminal |   |             |
| SPORT shift DOWN switch        | (B54) No. 18                                 | Chassis ground  | Ignition switch ON<br>SPORT shift down switch is ON         | Less than 1 |
|                                |  |                 | Ignition switch ON<br>SPORT switch shift mode switch is OFF | 8 or more   |