

## A Note on Using C Compiler Package M3T-NC30WA --On Inverting the Sign of a Signed Variable--

Please take note of the following problem in using the M3T-NC30WA C-compiler package (used for the M16C/60, M16C/30, M16C/Tiny, M16C/20, M16C/10, and R8C/Tiny series MCUs):

- On inverting the sign of a signed variable
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### 1. Versions Concerned

M3T-NC30WA V.5.00 Release 1 through V.5.30 Release 1

### 2. Description

Inverting the sign of a signed variable may result in incorrect code being generated if the variable is less than zero.

#### 2.1 Conditions

This problem occurs if all the following conditions are satisfied:

- (1) Any of the optimizing options -O1, -O2, -O3, -O4, -O5, -OR, and -OS is selected at compilation.
- (2) A signed variable is compared with zero in the controlling expression of an "if" statement.
- (3) The type of the variable in (2) is any of these, signed char, signed int, and signed short.
- (4) If the variable is less than zero in the comparison in (2), in the true statement exists only an expression where the above-mentioned variable is assigned to another with its sign being inverted.

#### 2.2 Example

```
-----  
signed char s1,s2;    /* Condition (3) */  
void func(void)  
{  
    if(s1 < 0)        /* Condition (2) */  
        s2 = -s1; /* Condition (4) and (5) */  
}
```

In the above example, -s1 is assigned to s2 even if the controlling expression is unsatisfied.

### 3. Workaround

Place a dummy asm function immediately after the controlling expression.

```
-----  
signed char s1,s2;  
void func(void)  
{  
    if(s1 < 0){  
        asm();    /* Dummy asm function placed */  
        s2 = -s1;  
    }  
}
```

### 4. Schedule of Fixing the Problem

We plan to fix this problem in our next release of the product.

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