

### ■ Features

- Wide Bandgap SiC MOSFET Technology.
- Low On-Resistance with High Blocking Voltage.
- Low Capacitances with High-Speed Switching.
- Low Reverse Recovery (Qrr).
- Easy to Parallel and Simple to Drive.
- Robust against Parasitic Turn on Even 0V Turn off Gate Voltage.

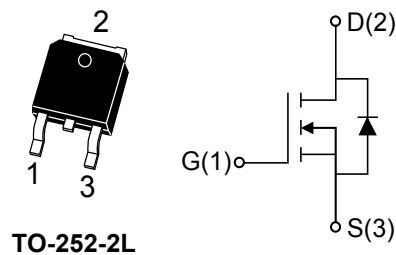
| Parameter                      | Value | Unit |
|--------------------------------|-------|------|
| $V_{DS}$                       | 800   | V    |
| $R_{DS(on)}_{typ@VGS=18V}$     | 130   | mΩ   |
| $I_{D@VGS=15V,TC=25^{\circ}C}$ | 20    | A    |

### ■ Benefits

- Reduced Switching Losses.
- Increased System Switching Frequency.
- Increased Power Density.
- Reduction of Heat Sink Requirements.
- Reduced EMI.

### ■ Application

- Switch Mode Power Supplies.
- High Voltage DC/DC Converters.
- Battery Chargers.
- Motor Drives.
- Pulsed Power Applications.



TO-252-2L



### Maximum ratings( $T_j=25^{\circ}C$ , Unless otherwise specified)

| Parameter                                       | Symbol          | Test Condition                     | Value       | Unit        |
|-------------------------------------------------|-----------------|------------------------------------|-------------|-------------|
| Drain to Source Voltage                         | $V_{DS,max}$    | $V_{GS}=0V, I_D=500\mu A$          | 800         | V           |
| Gate to Source Voltage                          | $V_{GS,max}$    | Absolute Maximum Values            | -10/+22     | V           |
| Recommended Operation Voltage of Gate to Source | $V_{GS,op}$     | Recommended Operational Values     | 0/+18       | V           |
| Continuous Drain Current                        | $I_D$           | $V_{GS}=15V, TC=25^{\circ}C$       | 20          | A           |
|                                                 |                 | $V_{GS}=15V, TC=100^{\circ}C$      | 18          | A           |
| Pulsed Drain Current                            | $I_{D(pulsed)}$ | $V_{GS}=15V, TC=25^{\circ}C$       | 40          | A           |
| Power Dissipation                               | $P_{tot}$       | $TC=25^{\circ}C, T_j=175^{\circ}C$ | 52          | W           |
| Operating and Storage Temperature               | $T_j, T_{stg}$  | —                                  | -55 to +175 | $^{\circ}C$ |



### Thermal Characteristics

| Parameter                                | Symbol          | Value |      |     | Unit |
|------------------------------------------|-----------------|-------|------|-----|------|
|                                          |                 | Min   | Typ  | Max |      |
| Thermal Resistance from Junction to Case | $R_{\theta JC}$ | —     | 2.88 | —   | °C/W |

### Electrical Characteristics

#### Static Characteristics

| Parameter                         | Symbol        | Test Condition                              | Value |     |      | Unit       |
|-----------------------------------|---------------|---------------------------------------------|-------|-----|------|------------|
|                                   |               |                                             | Min   | Typ | Max  |            |
| Gate Threshold Voltage            | $V_{GS(th)}$  | $V_{GS}=V_{DS}, I_D=3.5mA, T_j=25^{\circ}C$ | 2.7   | —   | 4.5  | V          |
| Drain to Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=500\mu A$                   | 800   | —   | —    | V          |
| Zero Gate Voltage Drain Current   | $I_{DSS}$     | $V_{GS}=0V, V_{DS}=800V, T_j=25^{\circ}C$   | —     | —   | 10   | $\mu A$    |
| Gate to Source Leakage Current    | $I_{GSS+}$    | $V_{GS}=22V, V_{DS}=0V, T_j=25^{\circ}C$    | —     | —   | 250  | nA         |
|                                   | $I_{GSS-}$    | $V_{GS}=-10V, V_{DS}=0V, T_j=25^{\circ}C$   | —     | —   | -250 | nA         |
| Drain to Source on Resistance     | $R_{DS(on)}$  | $V_{GS}=15V, I_D=8.5A, T_j=25^{\circ}C$     | —     | 190 | 250  | m $\Omega$ |
|                                   |               | $V_{GS}=15V, I_D=8.5A, T_j=175^{\circ}C$    | —     | 170 | —    | m $\Omega$ |
|                                   |               | $V_{GS}=18V, I_D=8.5A, T_j=25^{\circ}C$     | —     | 130 | 190  | m $\Omega$ |
|                                   |               | $V_{GS}=18V, I_D=8.5A, T_j=175^{\circ}C$    | —     | 140 | —    | m $\Omega$ |



## Electrical Characteristics

### Dynamic Characteristics

| Parameter                    | Symbol    | Test Condition                           | Value |      |     | Unit |
|------------------------------|-----------|------------------------------------------|-------|------|-----|------|
|                              |           |                                          | Min   | Typ  | Max |      |
| Input Capacitance            | $C_{iss}$ | VGS=0V, VDS=500V,<br>f=1MHz, Tj=25°C     | —     | 491  | —   | pF   |
| Output Capacitance           | $C_{oss}$ |                                          | —     | 39   | —   | pF   |
| Reverse Transfer Capacitance | $C_{rss}$ |                                          | —     | 4.2  | —   | pF   |
| Gate-Source Charge           | $Q_{gs}$  | VGS=0/15V, VDS=500V,<br>ID=8.5A, Tj=25°C | —     | 8.3  | —   | nC   |
| Gate-Drain Charge            | $Q_{gd}$  |                                          | —     | 13.8 | —   | nC   |
| Total Gate Charge            | $Q_g$     |                                          | —     | 28.6 | —   | nC   |
| Gate Resistance              | $R_g$     | VAC=25mV, f=1MHz                         | —     | 6.5  | —   | Ω    |

### Switching Characteristics

| Parameter           | Symbol       | Test Condition                          | Value |     |     | Unit |
|---------------------|--------------|-----------------------------------------|-------|-----|-----|------|
|                     |              |                                         | Min   | Typ | Max |      |
| Turn-On Delay Time  | $t_{d(on)}$  | VGS=0/15V, VDD=500V,<br>ID=8.5A, Rg=10Ω | —     | 16  | —   | ns   |
| Rise Time           | $t_r$        |                                         | —     | 55  | —   | ns   |
| Turn-Off Delay Time | $t_{d(off)}$ |                                         | —     | 34  | —   | ns   |
| Fall Time           | $t_f$        |                                         | —     | 71  | —   | ns   |

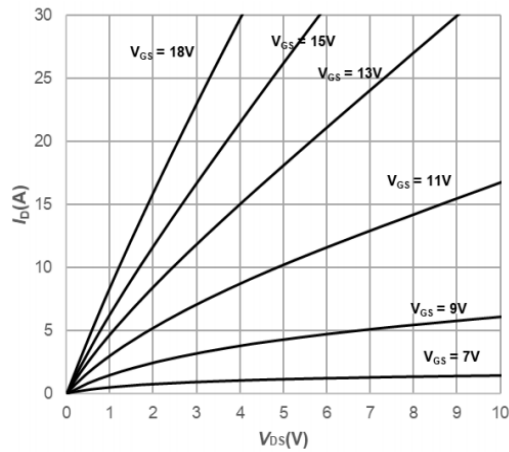
### Reverse Diode Characteristics

| Parameter                        | Symbol    | Test Condition                                          | Value |      |     | Unit |
|----------------------------------|-----------|---------------------------------------------------------|-------|------|-----|------|
|                                  |           |                                                         | Min   | Typ  | Max |      |
| Diode Forward Voltage            | $V_{SD}$  | VGS=0V, ISD=5A,<br>Tj=25°C                              | —     | 4    | —   | V    |
| Continuous Diode Forward Current | $I_S$     | VGS=0V, Tj=25°C                                         | —     | 20   | —   | A    |
| Reverse Recovery Time            | $t_{rr}$  | VGS=0V, ISD=8.5A,<br>VR=500V, di/dt=530A/us,<br>Tj=25°C | —     | 17.6 | —   | ns   |
| Reverse Recovery Charge          | $Q_{rr}$  |                                                         | —     | 43   | —   | nC   |
| Peak Reverse Recovery Current    | $I_{rrm}$ |                                                         | —     | 4.2  | —   | A    |

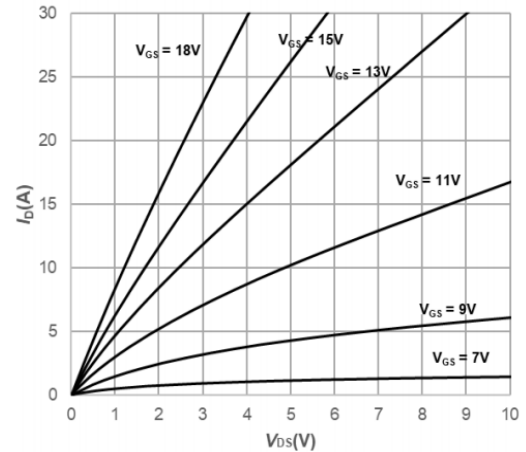


### Typical Performance

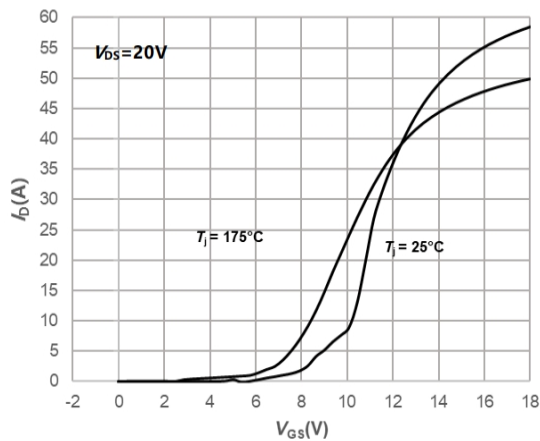
**Fig1. Output Characteristics  $T_j=25^\circ\text{C}$**



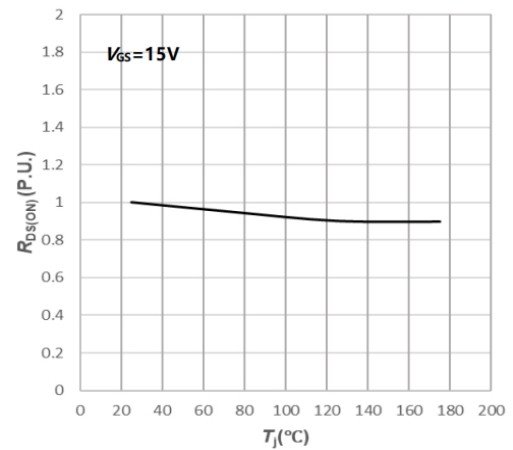
**Fig2. Output Characteristics  $T_j=175^\circ\text{C}$**



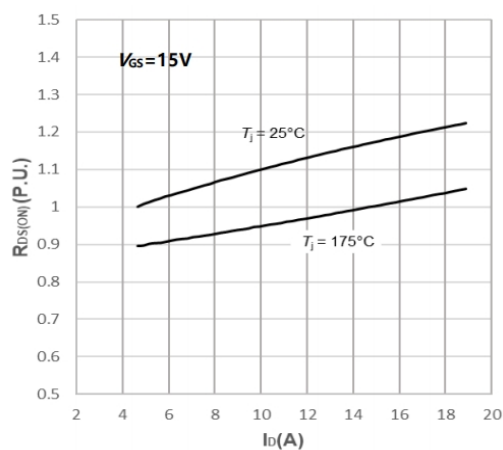
**Fig3. Typical Transfer Characteristics**



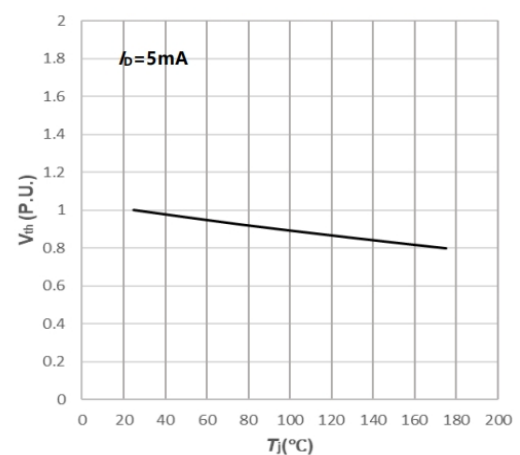
**Fig4. Normalized On-Resistance vs. Temperature**



**Fig5. Normalized On-Resistance vs. Drain Current For Various Temperatures**

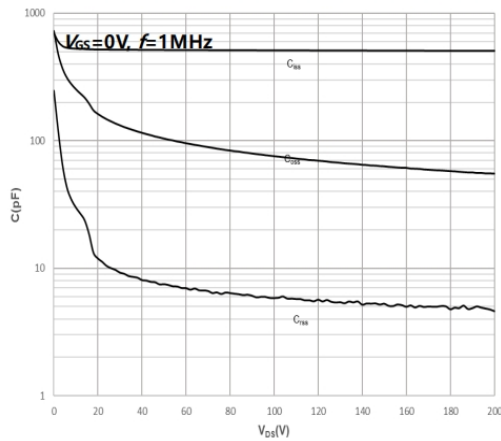


**Fig6. Normalized Threshold Voltage vs. Temperature**

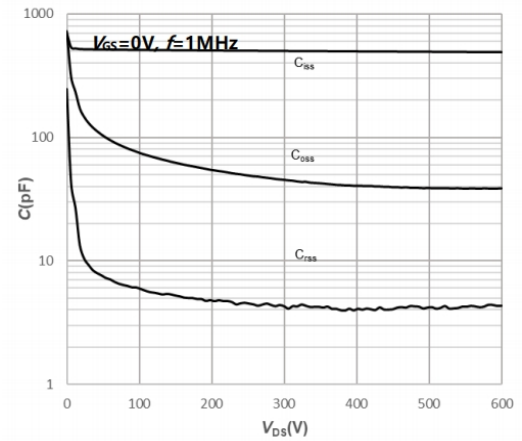


### Typical Performance

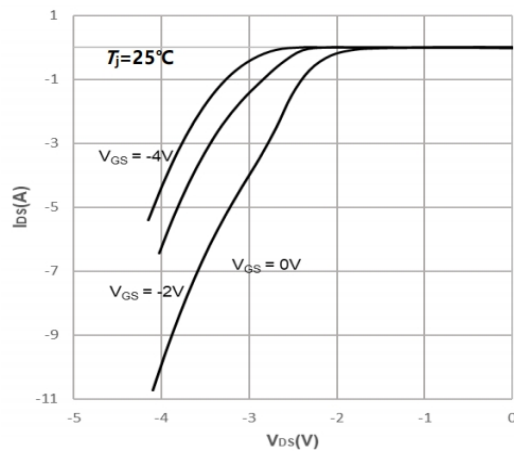
**Fig7. Capacitances vs. Drain-Source Voltage (0-200V)**



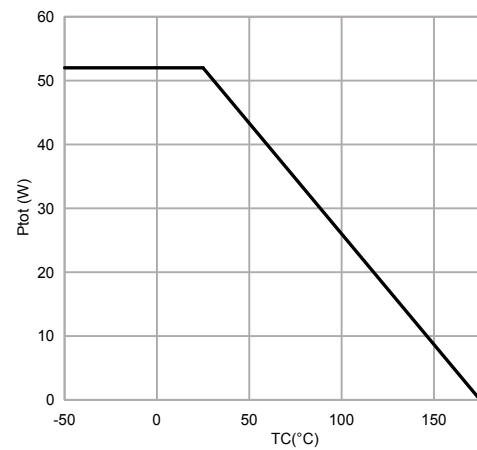
**Fig8. Capacitances vs. Drain-Source Voltage (0-600V)**



**Fig9. Body Diode Characteristics**

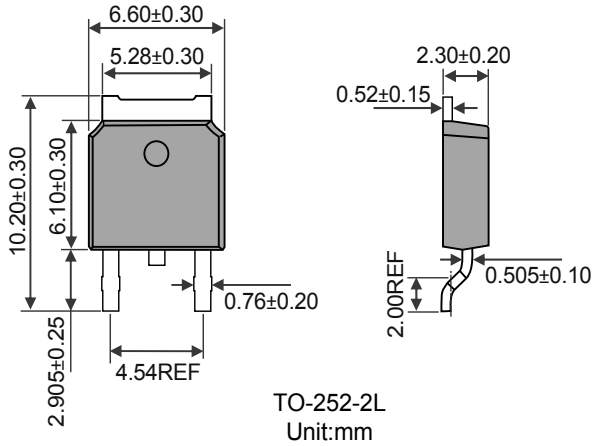


**Fig10. Maximum Power Dissipation vs. Case Temperature**

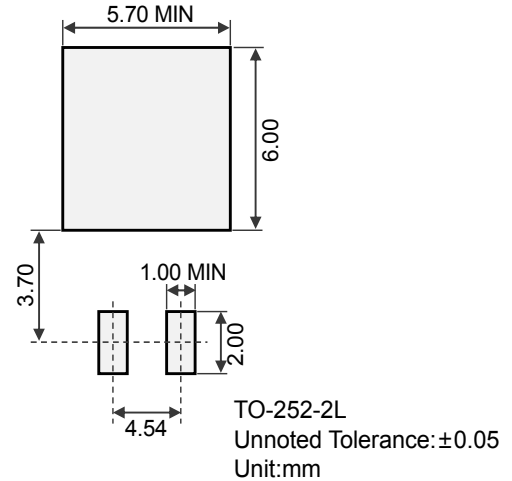


## Package Outline Dimensions & Suggested Solder Pad Layout

Package Outline Dimensions



Suggested Solder Pad Layout



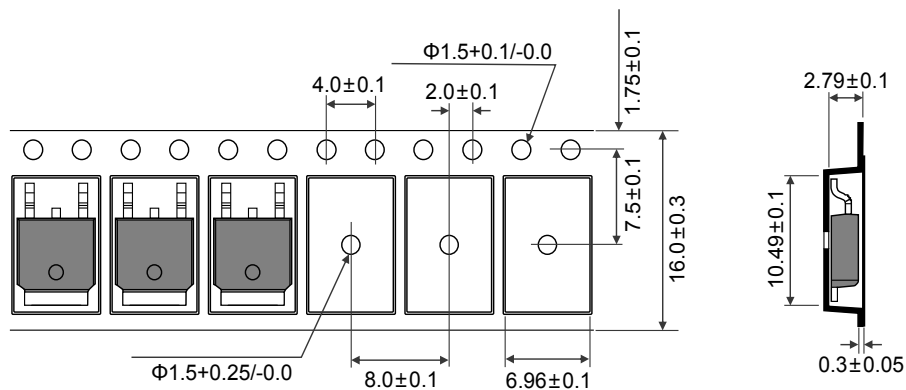
## Marking Information



“MHCHXM”= Product Logo  
“Marking Code”= The Following  
“XXXX”= Date Code Marking

| Marking Code | Part Number  |
|--------------|--------------|
| C80N130S1    | HXMC80N130S1 |

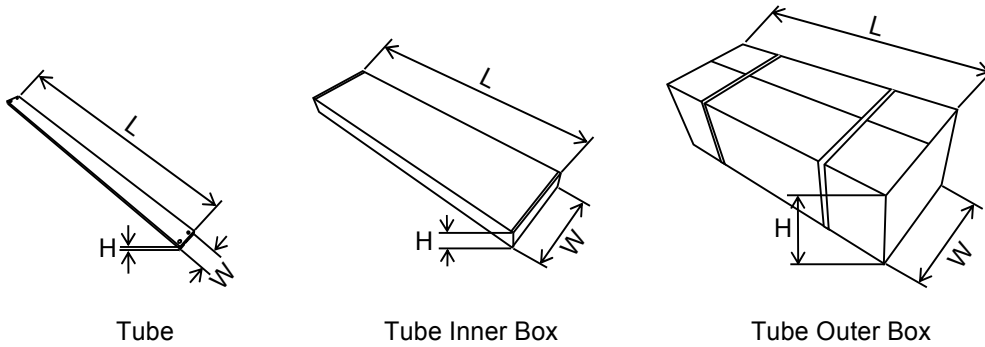
## Reel Tape Dimensions (Dimensions in mm)



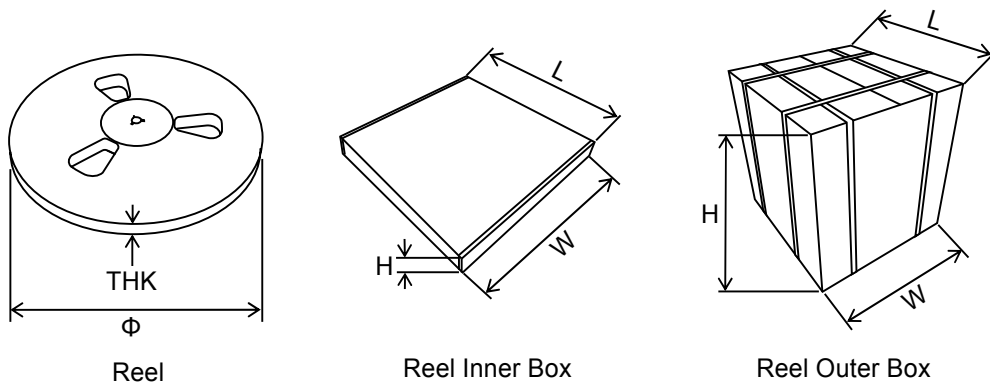
## Packing Information

| Packaging | Part Number | Quantity(pcs) | Size(mm)       |
|-----------|-------------|---------------|----------------|
| Tube      | Tube        | 80            | L540×W20×H5    |
|           | Inner Box   | 4000          | L570×W115×H55  |
|           | Outer Box   | 20000         | L595×W320×H135 |
| Reel      | Reel        | 3000          | Φ330×THK17     |
|           | Inner Box   | 3000          | L350×W340×H25  |
|           | Outer Box   | 30000         | L355×W300×H360 |

### Packaging:Tube



### Packaging:Reel



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