

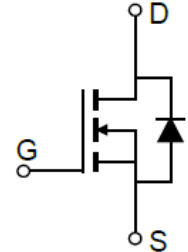
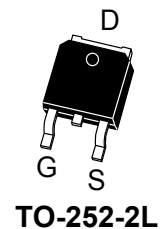
Features

- 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}	650	V
$R_{DS(on)_typ.}$ $V_{GS}=18V$	250	mΩ
I_D	11	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



Maximum ratings at $T_j=25^{\circ}\text{C}$, Unless otherwise specified

Parameter	Symbol	Test Condition	Value	Unit
Drain to Source Voltage	V_{DS}	$V_{GS} = 0V, I_D = 500\mu A$	650	V
Gate to Source Voltage	V_{GS}	Absolute maximum values	-10/+22	V
Recommended Operation Voltage of Gate to Source	V_{GSop}	Recommended operational values	0/+18	V
Continuous Drain Current	I_D	$V_{GS}=15V, T_C=25^{\circ}\text{C}$	11	A
		$V_{GS}=15V, T_C=175^{\circ}\text{C}$	9	
Pulsed Drain Current	I_{DM}	$V_{GS}=15V, T_C=25^{\circ}\text{C}$	22	A
Power Dissipation	P_{tot}	$T_C=25^{\circ}\text{C}, T_j=175^{\circ}\text{C}$	52	W
Operating and Storage Temperature	T_j, T_{stg}		-55 to +175	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Thermal Resistance from Junction to Case	$R_{th(j-c)}$	-	2.88	-	$^{\circ}\text{C/W}$

Electrical Characteristics

Static Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=500\mu A$	650			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=1.8mA$	2.7		4.5	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=650V, T_j=25^{\circ}\text{C}$	-		10	μA
Gate to Source Leakage Current	I_{GSS+}	$V_{GS}=22V, V_{DS}=0V$	-		250	nA
	I_{GSS-}	$V_{GS}=-10V, V_{DS}=0V$	-		-250	
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=15V, I_D=5A$	-	380	500	m Ω
		$V_{GS}=15V, I_D=5A, T_j=175^{\circ}\text{C}$		325		
		$V_{GS}=18V, I_D=5A$	-	250	380	
		$V_{GS}=18V, I_D=5A, T_j=175^{\circ}\text{C}$		270		



Dynamic Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=500V, f=1MHz,$ $T_j=25^{\circ}C$		254		pF
Output Capacitance	C_{oss}			20.2		
Reverse Transfer Capacitance	C_{rss}			2.4		
Total Gate Charge	Q_g	$V_{GS}=0/15V, V_{DS}=500V, I_D=5A,$ $T_j=25^{\circ}C$		21.3		nC
Gate-Source Charge	Q_{gs}			6.7		
Gate-Drain Charge	Q_{gd}			11.5		
Gate Resistance	R_g	$V_{AC}=25mV, f=1MHz$		14.3		Ω

Switching Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=0/15V, V_{DD}=500V, I_D=5A,$ $R_g=10\Omega$		24		ns
Rise Time	t_r			42		
Turn-Off Delay Time	$t_{d(off)}$			26.8		
Fall Time	t_f			76		

Reverse Diode Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=3A, T_j=25^{\circ}C$	-	4.5		V
Continuous Diode Forward Current	I_S	$V_{GS}=0V, T_j=25^{\circ}C$		11		A
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=5A,$ $V_R=500V, di/dt=530A/us,$ $T_j=25^{\circ}C$		17.8		ns
Reverse Recovery Charge	Q_{rr}			33.7		nC
Peak Reverse Recovery Current	I_{rrm}			3.5		A



Typical Performance

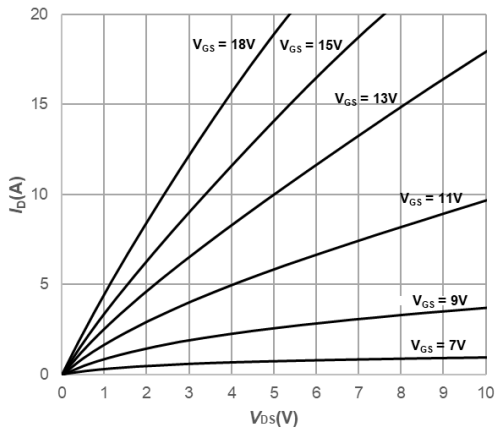


Fig1. Output Characteristics $T_j = 25^\circ\text{C}$

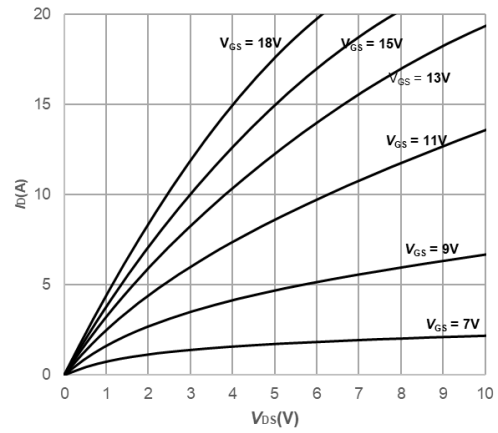


Fig2. Output Characteristics $T_j = 175^\circ\text{C}$

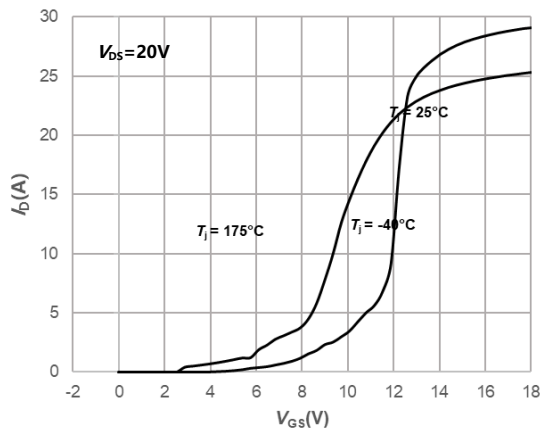


Fig3. Typical Transfer Characteristics

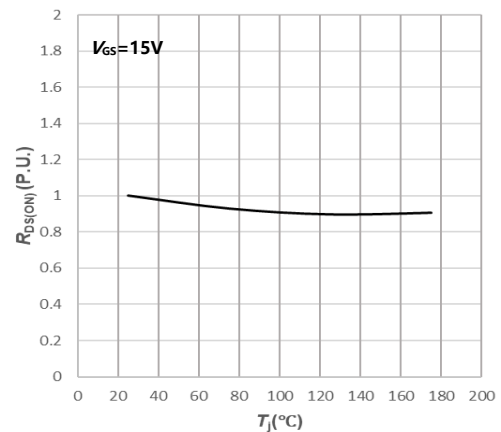


Fig4. Normalized On-Resistance vs. Temperature

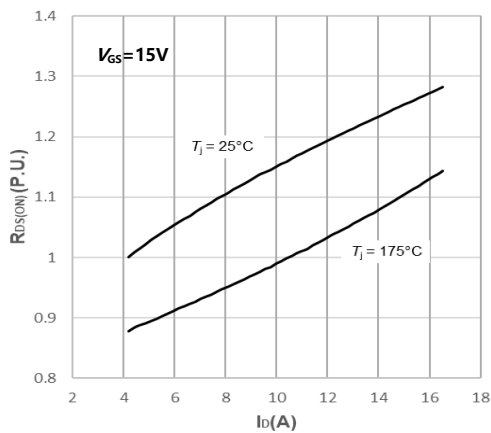


Fig5. Normalized On-Resistance vs. Drain Current For Various Temperatures

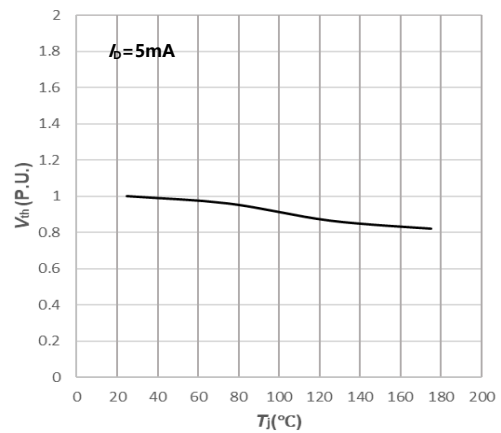


Fig6. Normalized Threshold Voltage vs. Temperature



Typical Performance

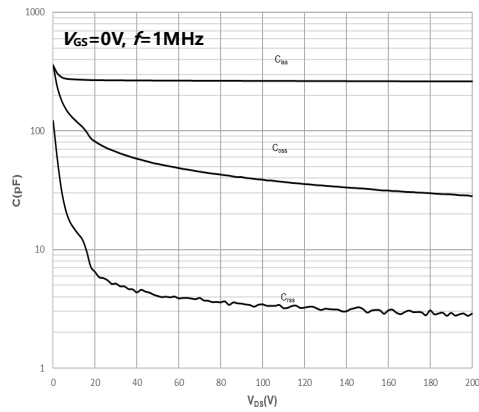


Fig7. Capacitances vs. Drain-Source Voltage (0-200V)

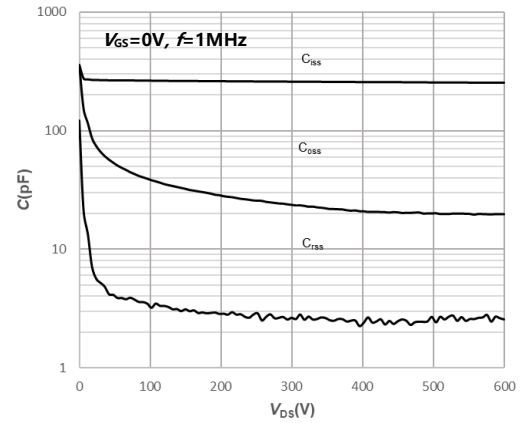


Fig8. Capacitances vs. Drain-Source Voltage (0-600V)

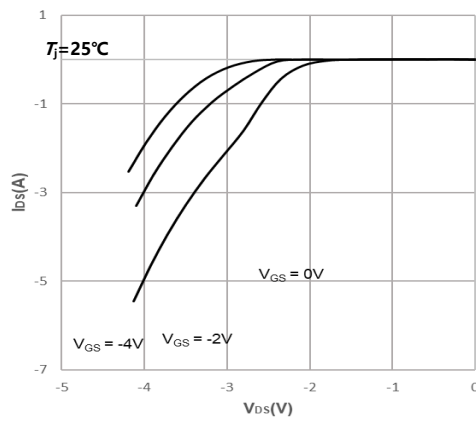
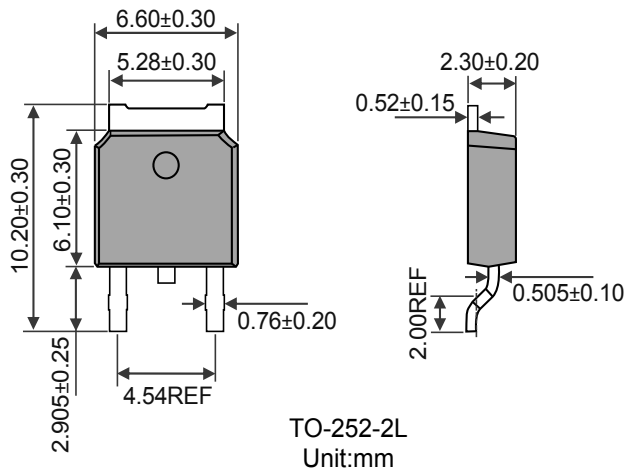


Fig9. Body Diode Characteristics

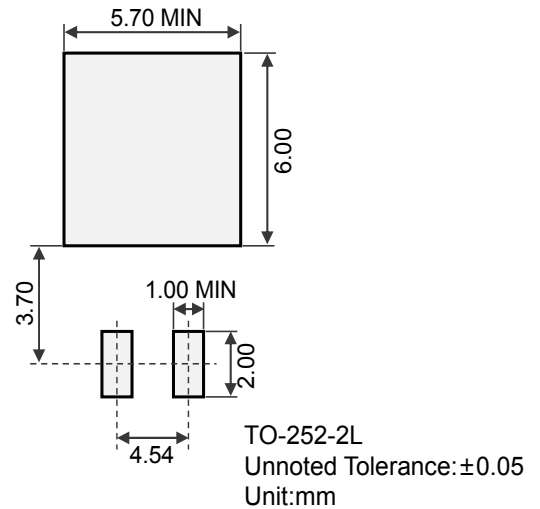


Package Outline Dimensions & Suggested Solder Pad Layout

Package Outline Dimensions



Suggested Solder Pad Layout



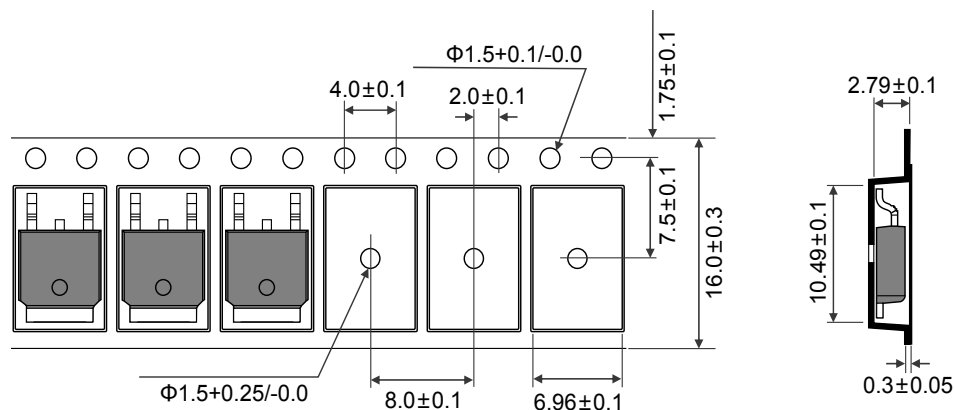
Marking Information



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

Marking Code	Part Number
C65N250S1	HXMC65N250S1

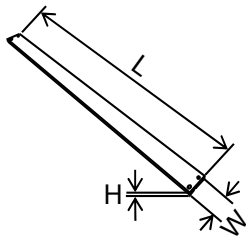
Reel Tape Dimensions (Dimensions in mm)



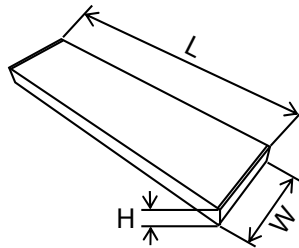
Packing Information

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

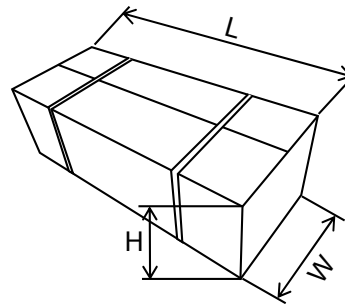
Packaging:Tube



Tube

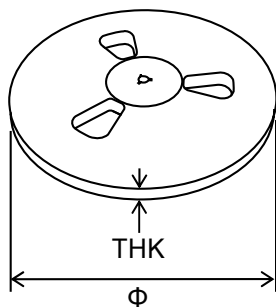


Tube Inner Box

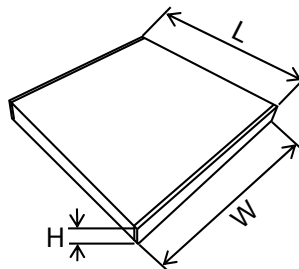


Tube Outer Box

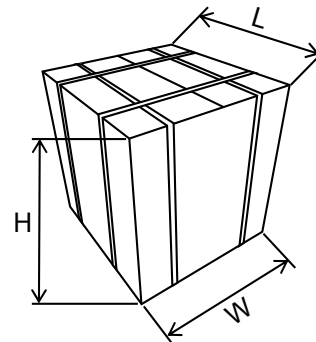
Packaging:Reel



Reel



Reel Inner Box



Reel Outer Box



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