

## Features

- SiC MOSFET technology
- High blocking voltage with low on-resistance
- High-speed switching with low capacitances
- Halogen Free. "Green" Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 0.68°C/W Junction to Case

## Applications

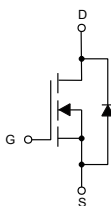
- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- Battery Chargers
- Motor Drives

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	1200	V
Gate-Source Voltage	$V_{GSmax}$	-8/+22	V
Gate-Source Voltage	$V_{GSop}$	-4/+18	V
Continuous Drain Current	$I_D$	38	A
Pulsed Drain Current <sup>(1)</sup>	$I_{DM}$	80	A
Total Power Dissipation, $T_c=25^\circ\text{C}$	$P_D$	220	W
Total Power Dissipation, $T_c=110^\circ\text{C}$	$P_D$	94	W

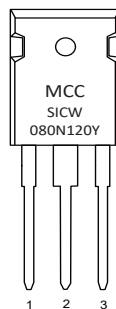
Note:

1. Pulse Test: Pulse Width  $\leq 10\mu\text{s}$ , Duty Cycle  $\leq 1\%$ .

## Internal Structure

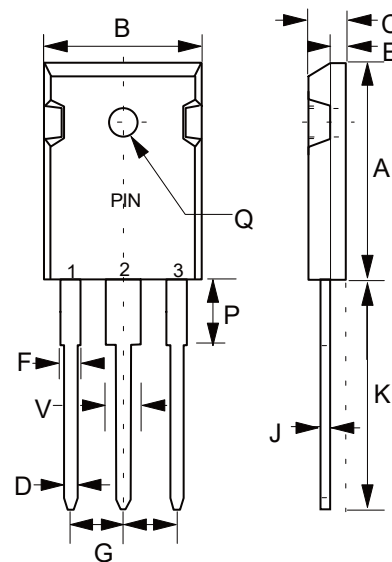


1. Gate
2. Drain
3. Source



# N-CHANNEL MOSFET

## TO-247



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.787	0.866	20.00	22.00	
B	0.598	0.638	15.20	16.20	
C	0.185	0.208	4.70	5.30	
D	0.035	0.059	0.90	1.50	
E	0.059	0.094	1.50	2.40	
F	0.067	0.091	1.70	2.30	
J	0.019	0.031	0.48	0.80	
K	0.748	0.833	19.00	21.15	
P	0.122	0.189	3.10	4.80	
Q	0.118	0.150	3.00	3.80	φ
V	0.106	0.134	2.70	3.40	
G	0.197	0.224	5.00	5.70	

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=100\mu A$	1200			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=18V$			100	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=1200V, V_{GS}=0V$		1	10	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=5mA$	2.3	2.9	3.6	V
		$V_{DS}=V_{GS}, I_D=5mA, T_j=175^\circ C$		2.2		V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=18V, I_D=20A$		77	85	m $\Omega$
		$V_{GS}=18V, I_D=20A, T_j=175^\circ C$		122		m $\Omega$
Internal Gate Resistance	$R_g$	$f=1MHz$		1.5		$\Omega$
Transconductance	$g_{FS}$	$V_{DS}=16V, I_D=20A$		10		S
		$V_{GS}=16V, I_D=20A, T_j=175^\circ C$		9.2		
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$			38		A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=-4V, I_S=10A$		3.9		V
		$V_{DS}=0V, I_{SD}=10A, T_j=175^\circ C$		3.2		V
Reverse Recovery Time	$t_{rr}$			28.24		ns
Reverse Recovery Charge	$Q_{rr}$	$V_{GS}=-4V, I_{SD}=20A, di_F/dt=2095A/\mu s$		190		nC
Peak Reverse Recovery Current	$I_{rrm}$			30.08		A
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=1000V, V_{GS}=0V, f=1MHz$		890		pF
Output Capacitance	$C_{oss}$			58		
Reverse Transfer Capacitance	$C_{rss}$			4		
Coss Stored Energy	$E_{oss}$			34		uJ
Total Gate Charge	$Q_g$	$V_{DS}=800V, V_{GS}=-4/+18V, I_D=20A$		41		nC
Gate-Source Charge	$Q_{gs}$			12		
Gate-Drain Charge	$Q_{gd}$			11		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=800V, V_{GS}=-4/+15V, R_G=0\Omega, I_{DS}=20A$		21		ns
Turn-On Rise Time	$t_r$			17		
Turn-Off Delay Time	$t_{d(off)}$			14		
Turn-Off Fall Time	$t_f$			8		
Turn-On switching energy	$E_{on}$			377		uJ
Turn-Off switching energy	$E_{off}$			14		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

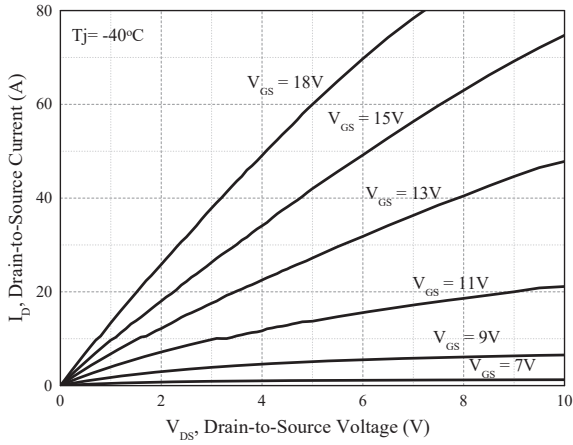


Fig. 2 - Typical Output Characteristics

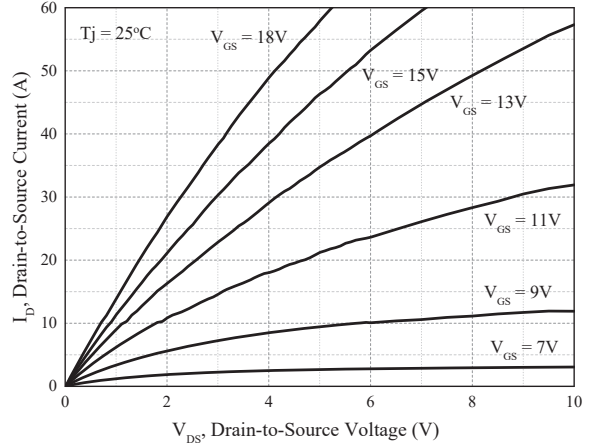


Fig. 3 - Typical Output Characteristics

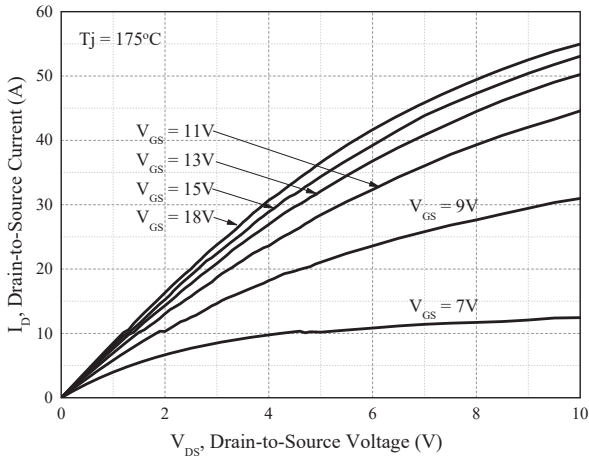


Fig. 4 - Transfer Characteristics for various junction temperature

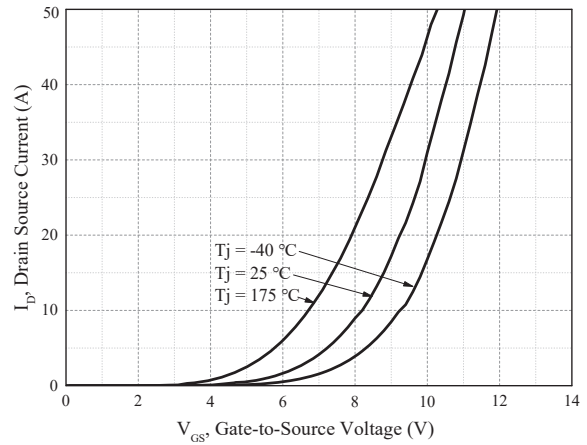


Fig. 5 - On-resistance vs temperature for various gate voltage

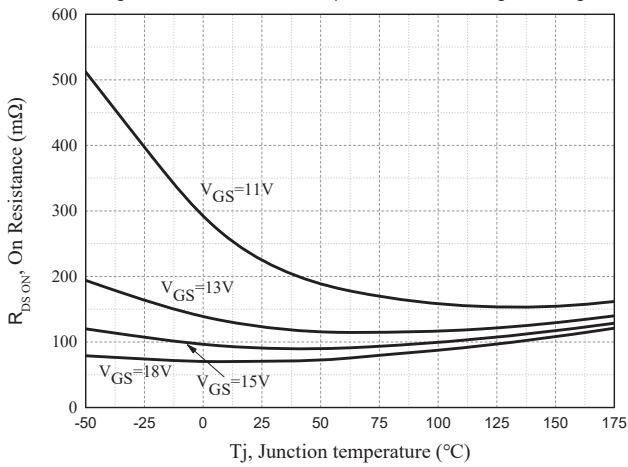
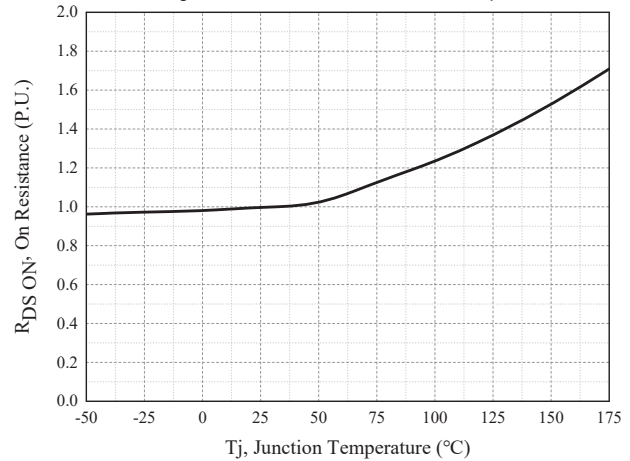


Fig. 6 - Normalized on-resistance vs temperature



## Curve Characteristics

Fig. 7 - On-resistance vs. drain current

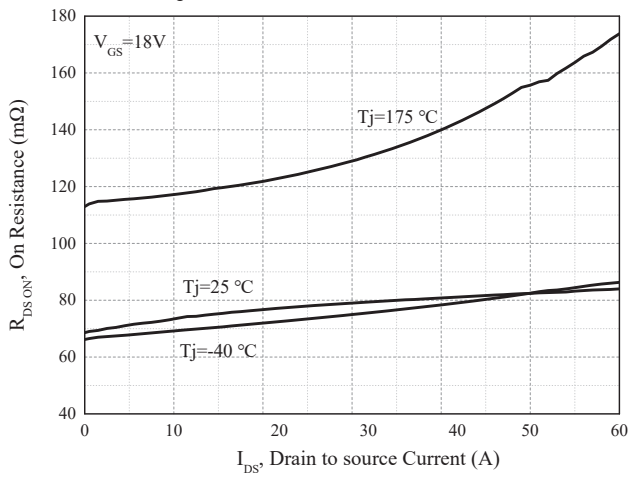


Fig. 8 - Body diode characteristic

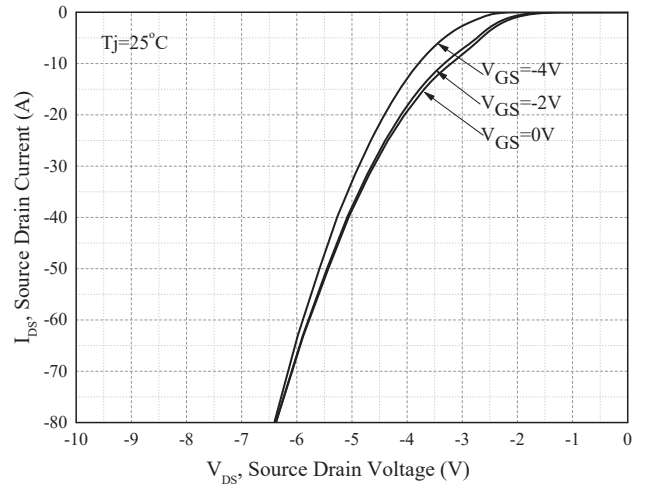


Fig. 9 - Body diode characteristic

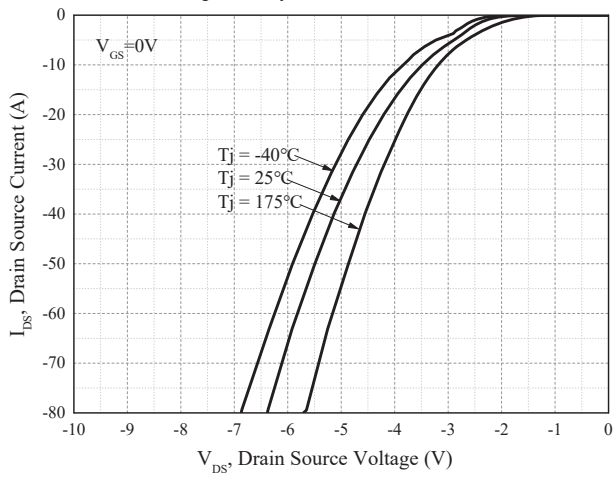


Fig. 10 - 3rd quadrant characteristic at  $T_j=25^\circ C$

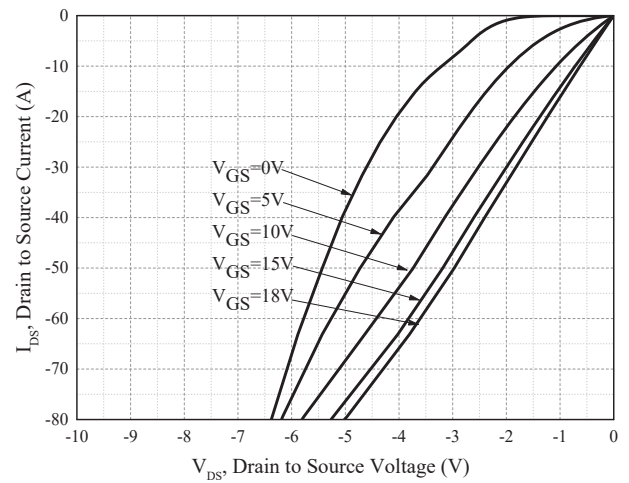


Fig. 11 - Threshold voltage vs. temperature

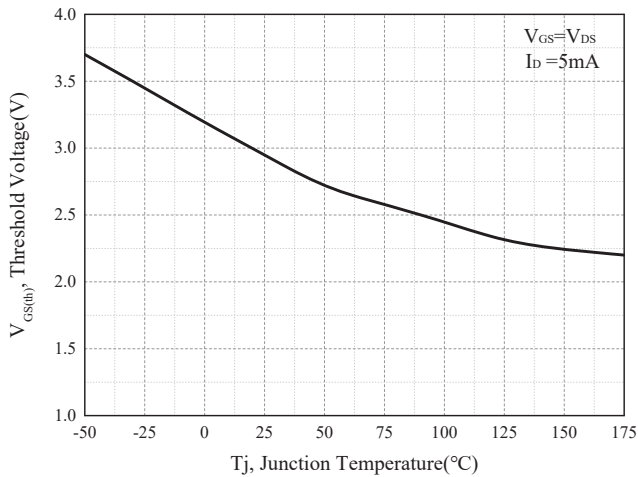
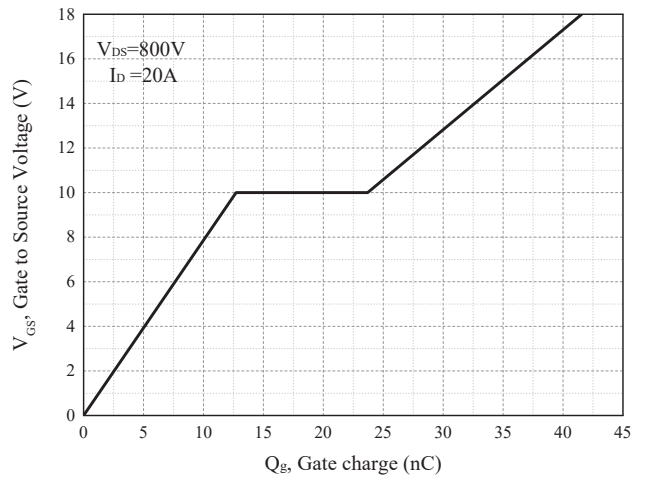


Fig. 12 - Gate charge characteristic



**Curve Characteristics**

Fig. 13 - Capacitances vs.drain source voltage (0-1000V)

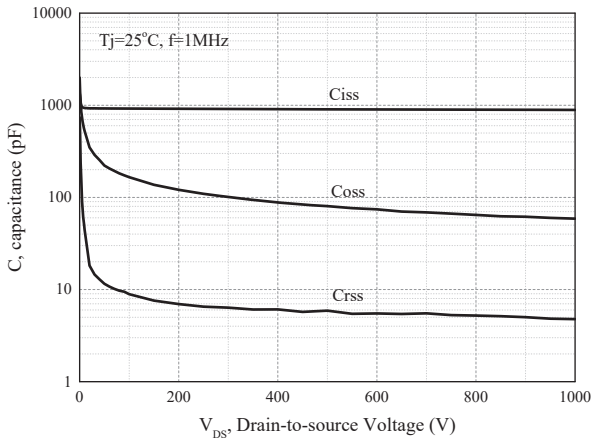


Fig. 14 - Capacitances vs.drain source voltage (0-200V)

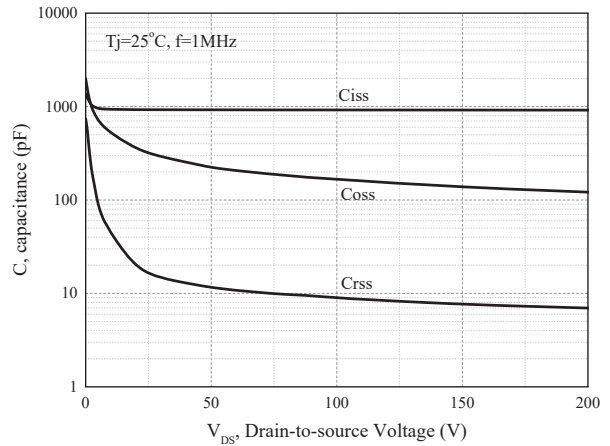


Fig. 15 - Output capacitor stored energy

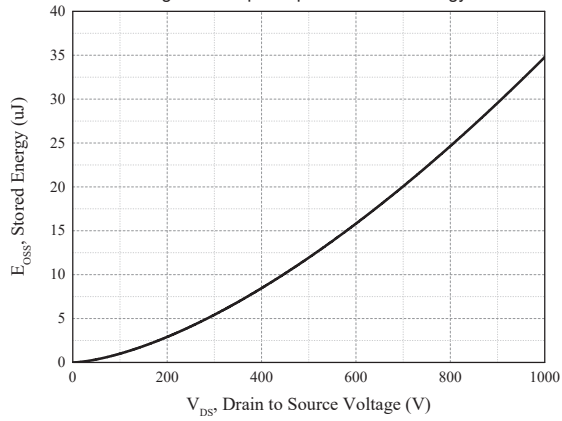


Fig. 16 - Reverse characteristics vs. Tj

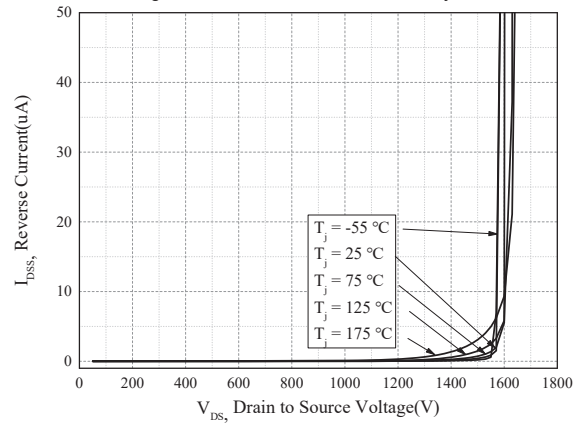


Fig. 17 - Maximum power dissipation derating vs. temperature

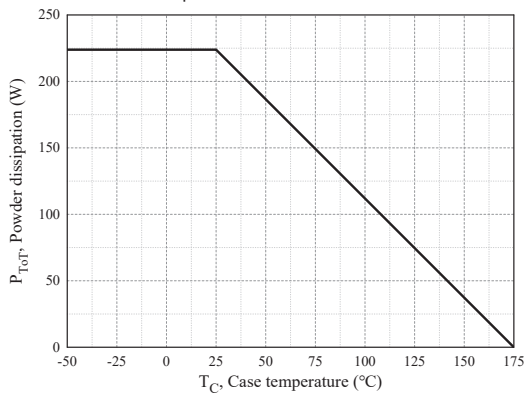
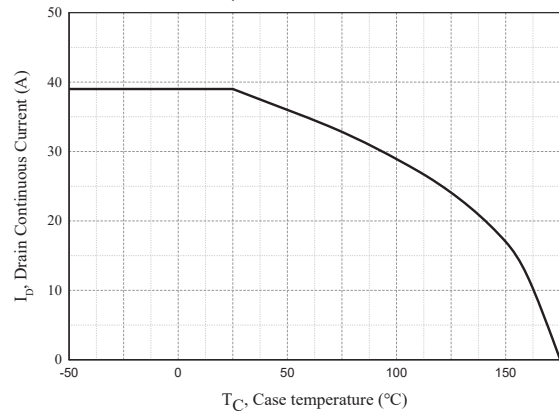
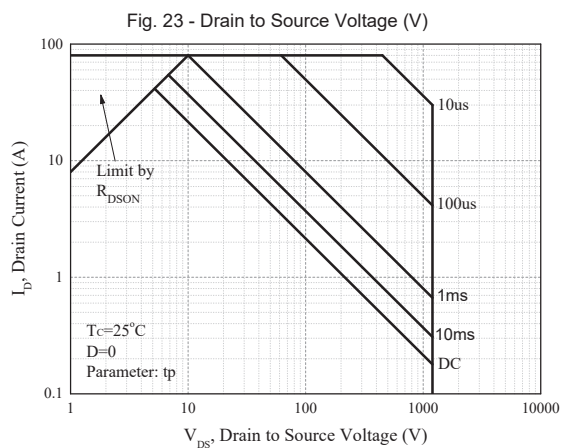
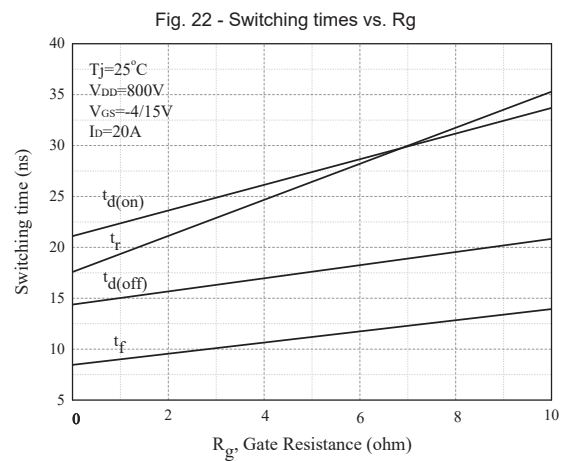
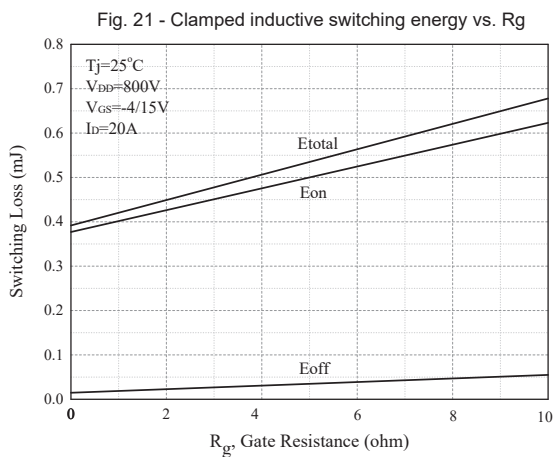
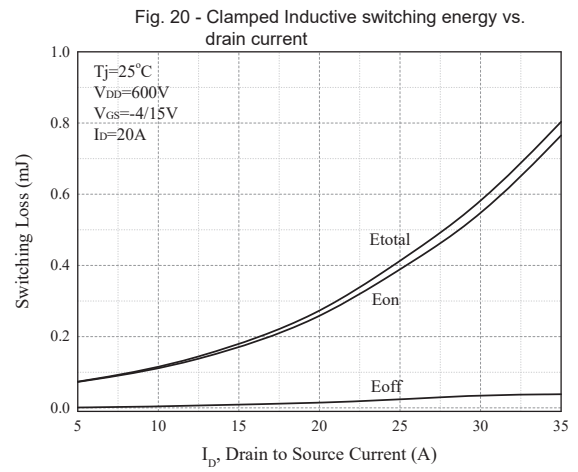
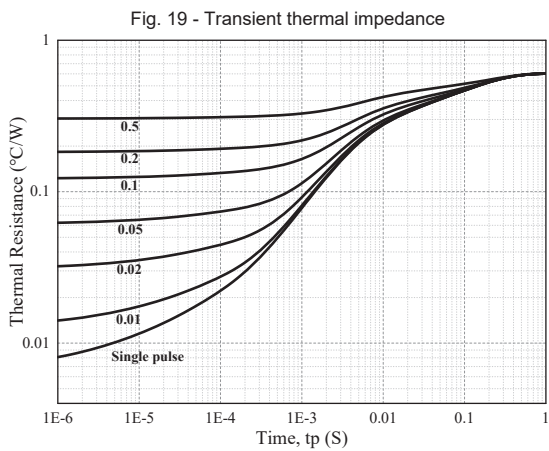


Fig. 18 - Coutinuous drain current derating vs. temperature



**Curve Characteristics**



## Ordering Information

Device	Packing
SICW080N120Y-BP	Tube:30pcs/Tube, 360pcs/Box, 1.8K/Ctn;

**\*\*\*IMPORTANT NOTICE\*\*\***

**Micro Commercial Components Corp.** reserves the right to make changes without further notice to any product herein to make corrections, modifications , enhancements , improvements , or other changes . **Micro Commercial Components Corp** . does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights ,nor the rights of others . The user of products in such applications shall assume all risks of such use and will agree to hold **Micro Commercial Components Corp** . and all the companies whose products are represented on our website, harmless against all damages. **Micro Commercial Components Corp.** products are sold subject to the general terms and conditions of commercial sale, as published at <https://www.mccsemi.com/Home/TermsAndConditions>.

**\*\*\*LIFE SUPPORT\*\*\***

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

**\*\*\*CUSTOMER AWARENESS\*\*\***

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [SiC MOSFETs](#) category:*

*Click to view products by [Micro Commercial Components \(MCC\)](#) manufacturer:*

Other Similar products are found below :

[NTC040N120SC1](#) [HC3M001K170J](#) [IMBG65R048M1HXTMA1](#) [IMW120R045M1](#) [SCT3080ALGC11](#) [C3M0120100K](#) [C2M1000170J](#)  
[C3M0120090J](#) [C3M0065090J](#) [C3M0280090J](#) [SCT2750NYTB](#) [SCT2H12NYTB](#) [C3M0021120D](#) [C3M0016120K](#) [C3M0045065D](#)  
[C3M0045065K](#) [E3M0120090J](#) [C3M0065090J-TR](#) [C3M0120100J](#) [C3M0075120J](#) [DMWS120H100SM4](#) [DMWSH120H28SM4](#)  
[DMWSH120H90SM4](#) [DMWSH120H90SM4Q](#) [DMWSH120H28SM4Q](#) [DMWSH120H90SCT7Q](#) [DMWSH120H28SM3](#)  
[DMWSH120H43SM3](#) [DMWSH120H90SM3](#) [DMWSH120H28SM3Q](#) [DMWSH120H90SM3Q](#) [DIF120SIC053-AQ](#) [DIW120SIC059-AQ](#)  
[G2R1000MT17D](#) [G3R60MT07K](#) [G2R50MT33K](#) [G3R12MT12K](#) [G3R160MT12D](#) [G3R160MT12J-TR](#) [G3R160MT17D](#) [G3R160MT17J-TR](#)  
[G3R20MT12K](#) [G3R20MT12N](#) [G3R20MT17K](#) [G3R20MT17N](#) [G3R30MT12J-TR](#) [G3R30MT12K](#) [G3R350MT12D](#) [G3R40MT12D](#)  
[G3R40MT12J](#)