Features

- Effectively lower down T_j and R_{th}, high anti-EMI ability
- High speed switching with low capacitances
- High blocking voltage with low $R_{DS(on)}$
- Easy to drive and parallel
- RoHS compliant

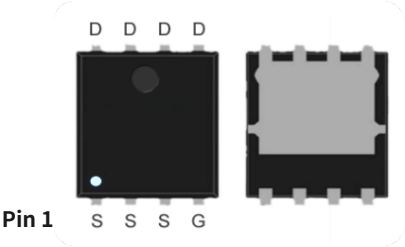
Benefits

- Increased power density
- Higher operating frequency
- Reduced heat sink requirements
- Higher efficiency
- EMI reduction

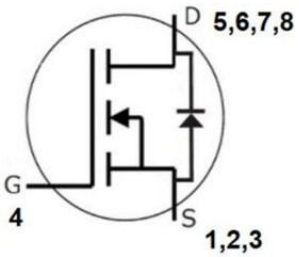
Applications

- Power factor correction modules
- Switch mode power supplies
- Power inverters
- High voltage converters

Parameter	Rating	Units
V_{DS}	**800**	V
$I_{D\ @\ 25°C}$	**20**	A
$R_{DS(on)}$	**160**	mΩ



PDFN 5×6 Package



Part Number	Package	Marking
GC3M018065P	PDFN 5×6	GC3M018065

Maximum Ratings (T_j = 25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Value	Unit
V_{DS}	Drain-Source Voltage		800	V
I_D	Continuous Drain Current	Tc=25°C Tc=100°C	20 17.5	A
I_{DM}	Peak Drain Current	Pulse width tp limited by Tjmax	30	A
V_{GS} max	Gate-Source Voltage		-5/ 26	V
V_{GS} op	Recommend Gate-Source Voltage		0/ 15	V
P_{tot}	Power Dissipation	Tc=25°C Tc=100°C	52 25	W
T_j	Operating Junction Temperature		-55~175	°C
T_{stg}	Storage Temperature		-55~175	°C

Electrical Characteristics (T_c = 25°C unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	800			V	VGS = 0 V, ID = 1 mA	
I_{DSS}	Zero Gate Voltage Drain Current		2	100	μA	VGS = 0 V, VDS = 750 V	
I_{GSS+}	Gate-Source Leakage Current			200	nA	VDS = 0 V, VGS = +22 V	
I_{GSS-}	Gate-Source Leakage Current			200	nA	VDS = 0 V, VGS = -10 V	
$V_{GS(th)}$	Gate Threshold Voltage	2.2	3.5	4.2	V	VGS = VDS, IDS = 1 mA, TJ = 25°C	Fig. 14
			2.6			VGS = VDS, IDS = 1 mA, TJ = 175°C	
$R_{DS(on)}$	Static Drain-Source On-Resistance		160 125	180 130	mΩ	VGS = 15 V, ID = 6 A, TJ = 25°C VGS = 18 V	Fig. 15
			195 155			VGS = 15 V, ID = 6 A, TJ = 175°C VGS = 18 V	
C_{iss}	Input Capacitance		208		pF	VDS = 400 V, f = 1 MHz, VGS = 0 V	Fig. 8
C_{oss}	Output Capacitance		18				
C_{rss}	Reverse Transfer Capacitance		1.8				
Q_g	Total Gate Charge		10.6		nC	VDD = 400 V, VGS = -5/18 V, ID = 5 A	Fig. 7
Q_{gs}	Gate-Source Charge		5.1				
Q_{gd}	Gate-Drain Charge		2.2				
$R_{G(int)}$	Gate Input Resistance		1.2		Ω	f = 1 MHz, ID = 0 A	
E_{on}	Turn-On Switching Energy		25		μJ	VDD = 400 V, ID = 5 A, RG = 10 Ω, VGS = -5/18 V	Fig. 12
E_{off}	Turn-Off Switching Energy		10				
$t_{d(on)}$	Turn-On Delay Time		5		ns	VDD = 400 V, ID = 5 A, RG = 10 Ω, VGS = -5/18 V	
t_r	Rise Time		17				
$t_{d(off)}$	Turn-Off Delay Time		8				
t_f	Fall Time		10				

Reverse SiC Diode Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_{SD}	Diode Forward Voltage	4.0		V	VGS = -4V, ISD = 5A, TJ = 25°C	Fig. 16
		3.6			VGS = -4 V, ISD = 5 A, TJ = 175°C	Fig. 17
$^*I_{SD}$	Continuous Diode Forward Current		18	A	TC = 25°C	
			10		TC = 175°C	
t_{rr}	Reverse Recovery Time	50		ns	ISD = 5 A, di/dt = 1000 A/μs, VDD = 400 V, VGS = -5 V	
Q_{rr}	Reverse Recovery Charge	38		nC		
I_{RRM}	Peak Reverse Recovery Current	2.4		A		

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Test Conditions	Note
R_{thJC}	Thermal Resistance from Junction to Case	2.88	°C/W		Fig. 2
R_{thJA}	Thermal Resistance From Junction to Ambient	40			

Typical Characteristics

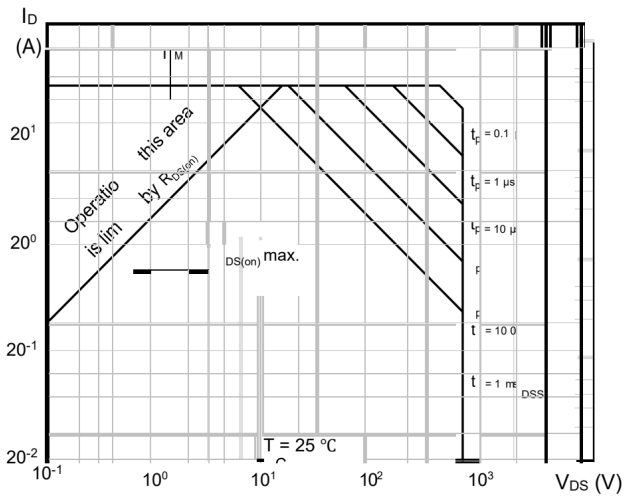


Figure 1. Safe Operating Area

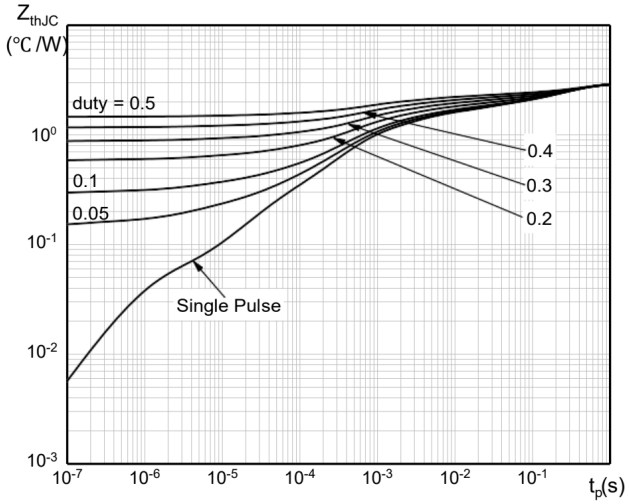


Figure 2. Maximum Transient Thermal Impedance

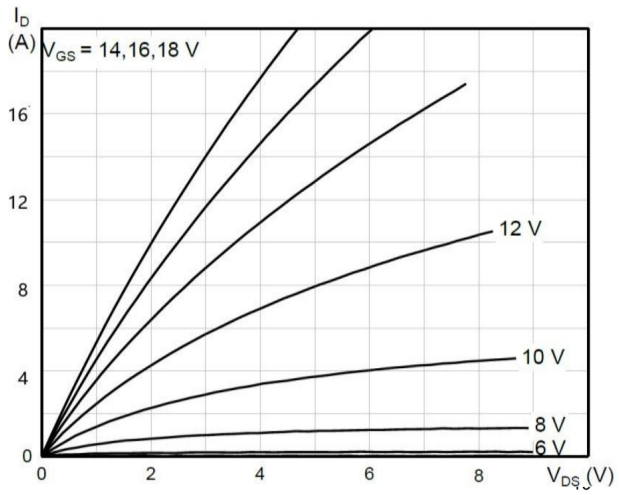


Figure 3. Typical Output Characteristics, T_J = 25°C

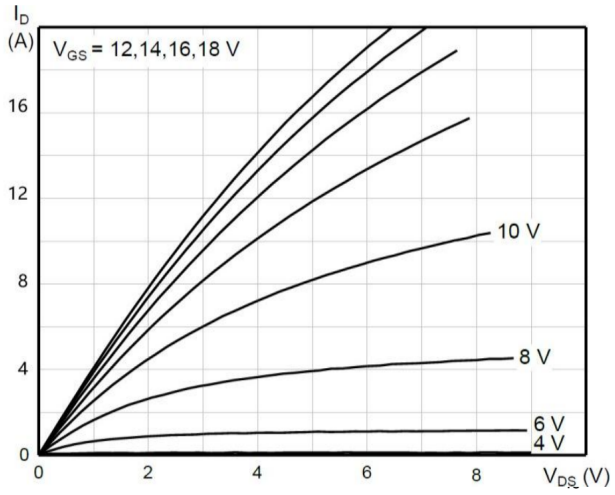


Figure 4. Typical Output Characteristics, T_J =175°C

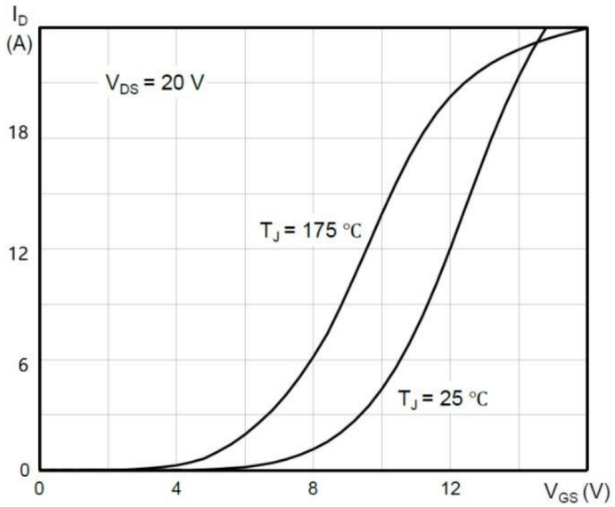


Figure 5. Typical Transfer Characteristics

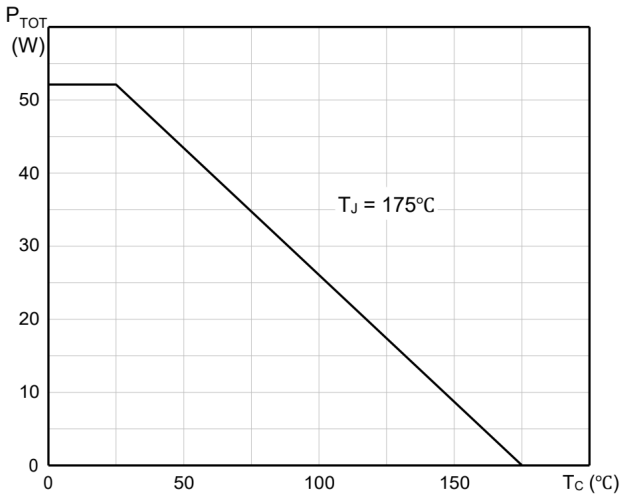


Figure 6. Total Power Dissipation

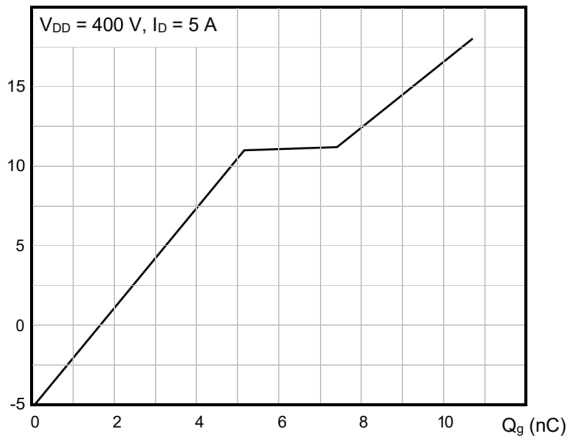


Figure 7. Typical Gate Charge Characteristics

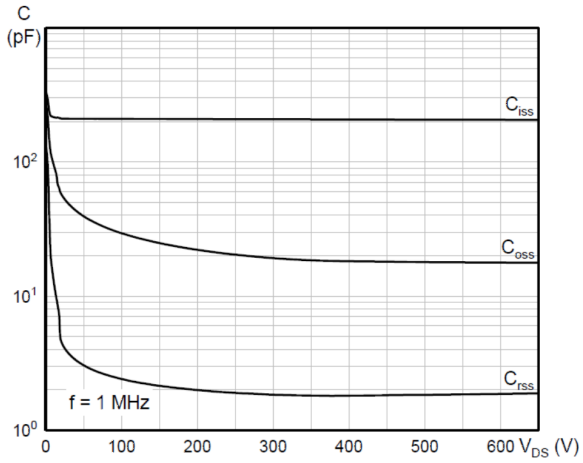


Figure 8. Typical Capacitance Characteristics

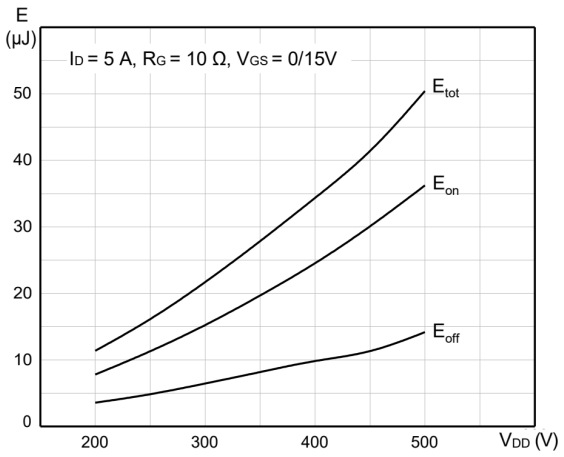


Figure 9. Typical Switching Energy vs. Supply Voltage

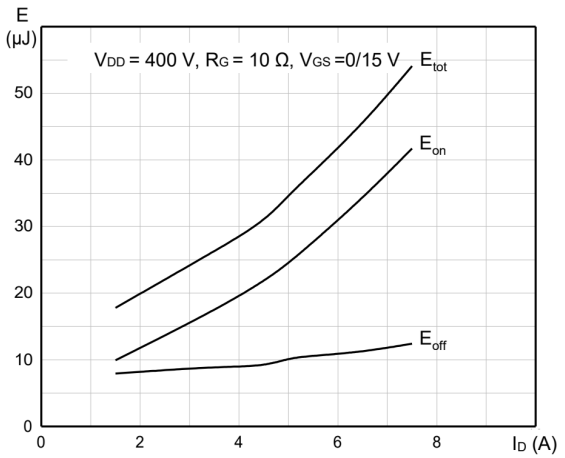


Figure 10. Typical Switching Energy vs. Drain Current

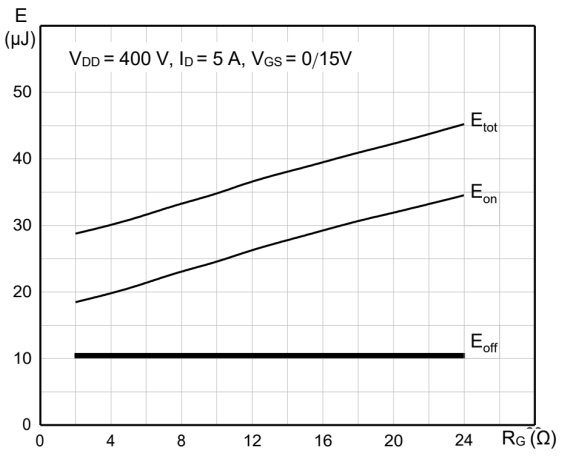


Figure 11. Switching Energy vs. Gate Resistance

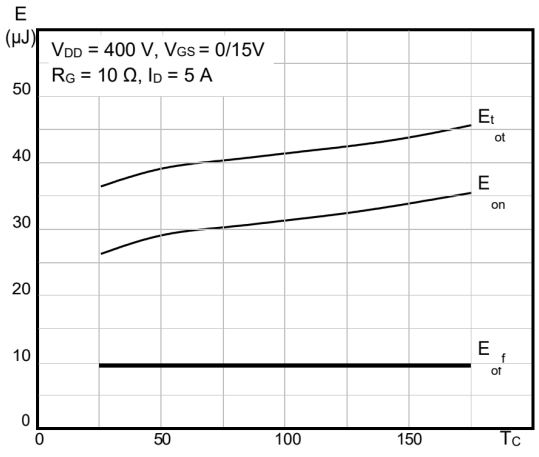


Figure 12. Typical Switching Energy vs. Temperature

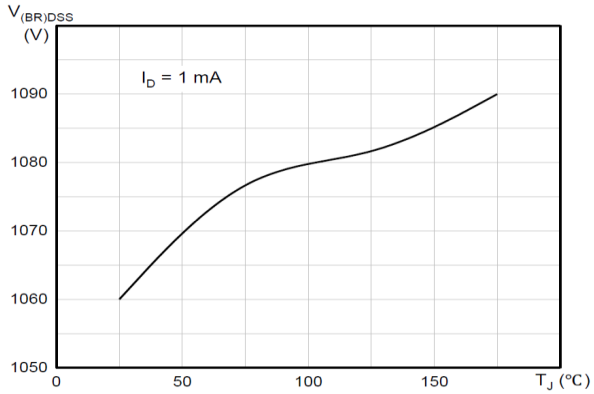


Figure 13. Breakdown Voltage vs. Temperature

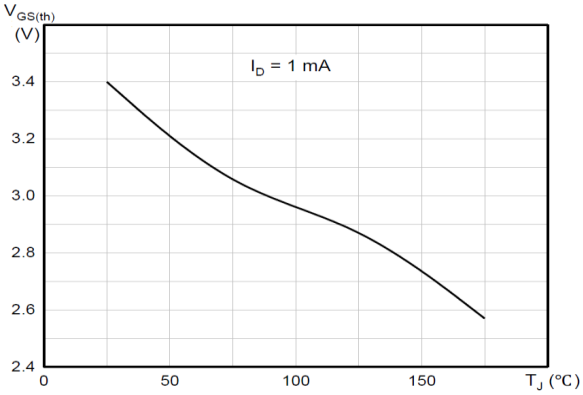


Figure 14. Gate Threshold vs. Temperature

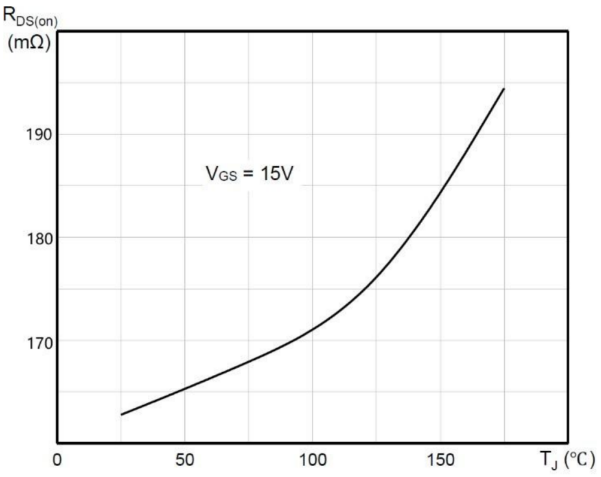


Figure 15. On-Resistance vs. Temperature

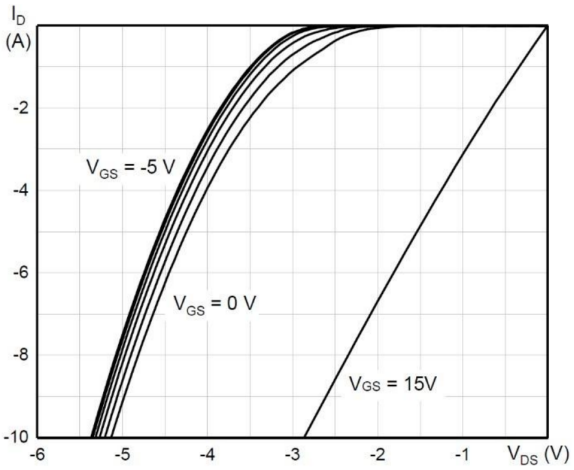
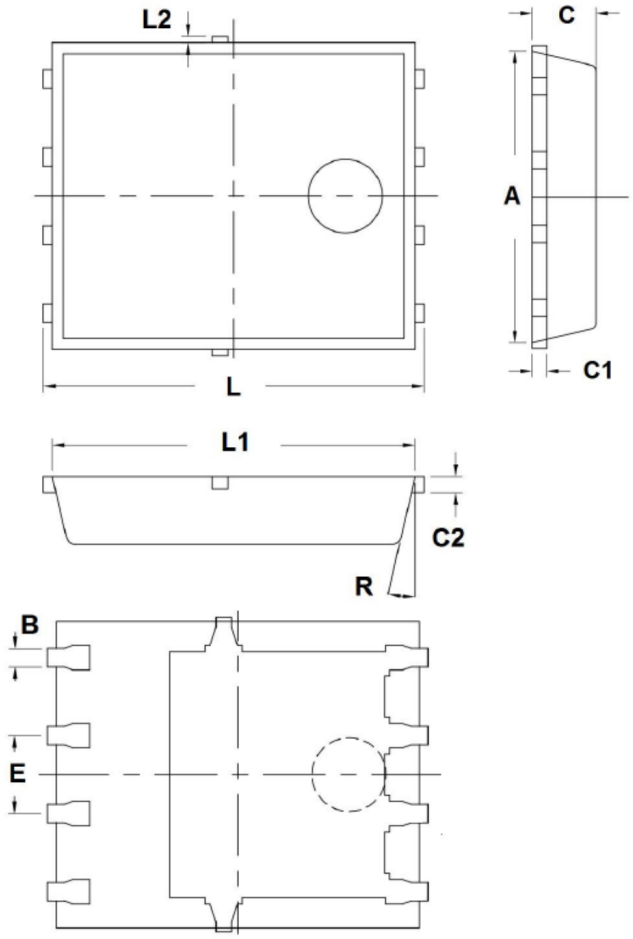


Figure 16. Body Diode Characteristics, T_J = 25°C

Package Outline Dimension: PDFN 5×6

PDFN 5*6



Dim.	Min.	Max.
A	4.8	5.2
B	0.25	0.35
C	1.0	1.2
C1	Typ 0.254	
C2	Typ 0.254	
E	Typ 1.27	
L	6.0	6.3
L1	5.7	6.0
L2	MAX 0.2	
R	Typ 13°	

All Dimensions in millimeter

Revision History

Revision	Date of Release	Description of Changes
Preliminary	25. Aug. 2025	Initial release
	19.Sep. 2025	V1.0

Information

For further information on technology, delivery terms and conditions and prices, please contact SUPSiC.

Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device. Hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non- infringement of intellectual property rights of any third party. 1 9.Sep.2025 V 1.0 SUPSiC Copyright