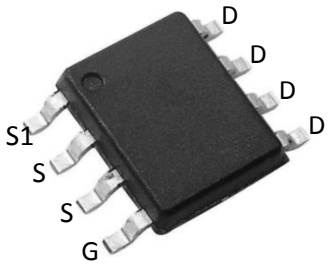
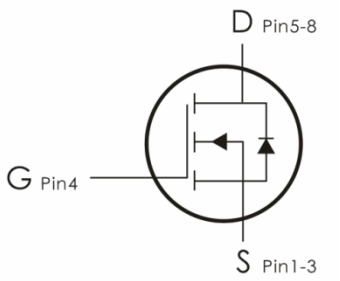
Description：

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.





Features：

1) V_{DS}=30V,I_D=20A,$R_{DS(ON)}$<6mΩ @V_{GS}=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.

Absolute Maximum Ratings： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T_C=25℃)	20	A
	Drain Current – Continuous (T_C=100℃)	12.6	
I_{DM}	Drain Current – Pulsed[1]	80	
P_D	Power Dissipation (T_C=25℃)	5.4	W
	Power Dissipation – Derate above 25℃	0.043	
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	23	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	85	

Package Marking and Ordering Information：

Part NO.	Marking	Package
MIC-SC006NG	C006N	SOP-8

Electrical Characteristics： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	---	---	V
△BVDSS/△TJ	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.04	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=24V , V_{GS}=0V , T_J=125℃	---	---	10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1.2	1.6	2.5	V
△VGS(th)	VGS(th) Temperature Coefficient		---	4	---	mV/℃
$R_{DS(ON)}$	Static Drain-Source On Resistance	V_{GS}=10V,I_D=10A	---	5	6	mΩ
		V_{GS}=4.5V,I_D=5A	---	6.5	9	
G_{FS}	Forward Transconductance	V_{DS}=10V, I_D=10A	---	18	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	1160	1900	pF
C_{oss}	Output Capacitance		---	200	400	
C_{rss}	Reverse Transfer Capacitance		---	180	360	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time[2,3]	V_{DS}=15V, I_D=15A, R_{GEN}=3.3Ω , V_{GS}=10V	---	7.5	15	ns
t_r	Rise Time[2,3]		---	14.5	28	ns
$t_{d(off)}$	Turn-Off Delay Time[2,3]		---	35.2	60	ns
t_f	Fall Time[2,3]		---	9.6	19	ns

Q_g	Total Gate Charge[2,3]	V_{GS}=4.5V, V_{DS}=15V, I_D=20A	---	11.1	22	nC
Q_{gs}	Gate-Source Charge[2,3]		---	1.85	3.7	nC
Q_{gd}	Gate-Drain "Miller" Charge[2,3]		---	6.8	13	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage[3]	V_{GS}=0V,I_S=1A,T_J=25℃	---	---	1	V
I_S	Continuous Source Current	VG=VD=0V , Force Current	---	---	20	A
I_{SM}	Pulsed Source Current		---	---	40	A

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Characteristics: (T_C=25℃ unless otherwise noted)

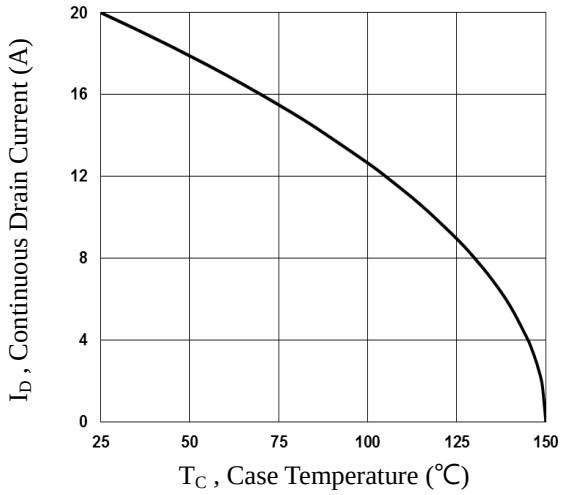


Fig.1 Continuous Drain Current vs. T_C

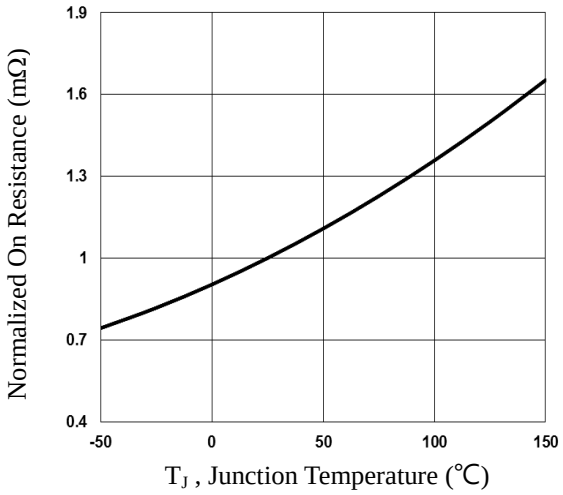


Fig.2 Normalized RDSON vs. T_J

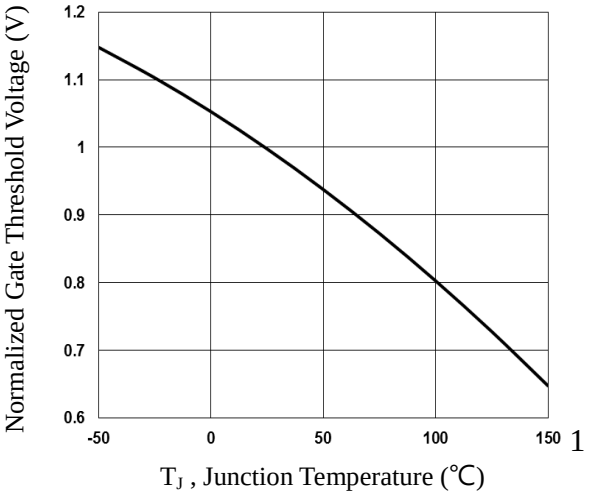


Fig.3 Normalized V_{th} vs. T_J

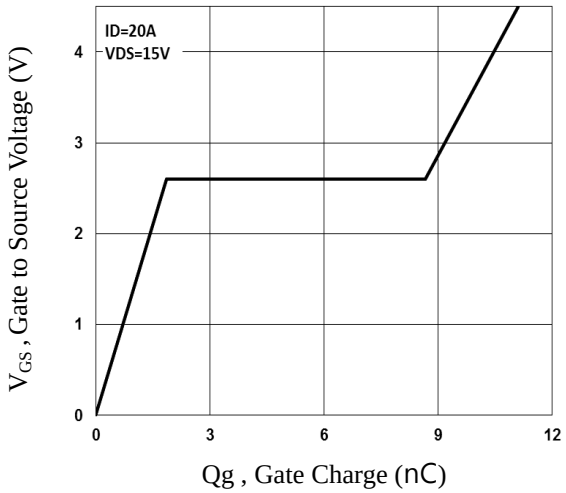


Fig.4 Gate Charge Waveform

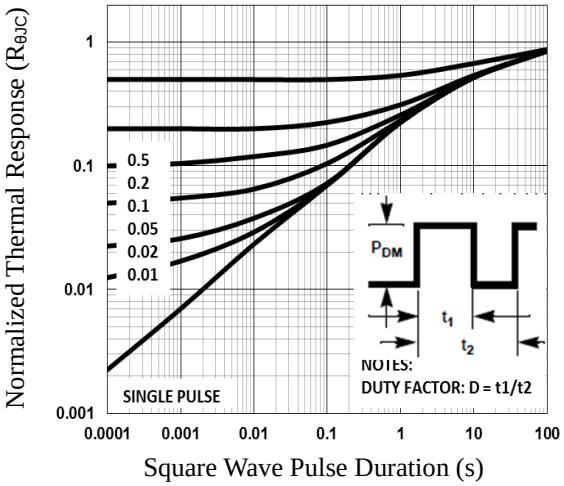


Fig.5 Normalized Transient Impedance

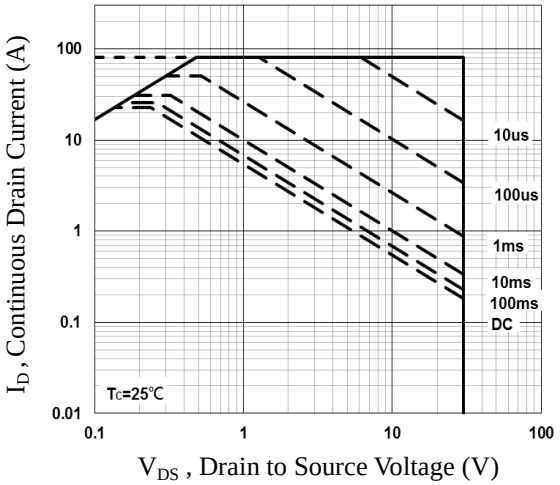


Fig.6 Maximum Safe Operation Area

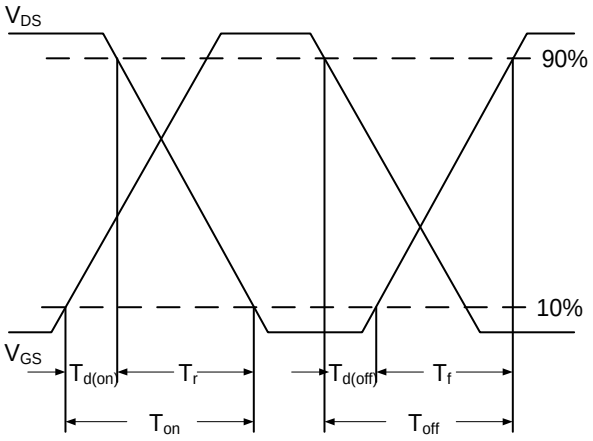


Fig.7 Switching Time Waveform

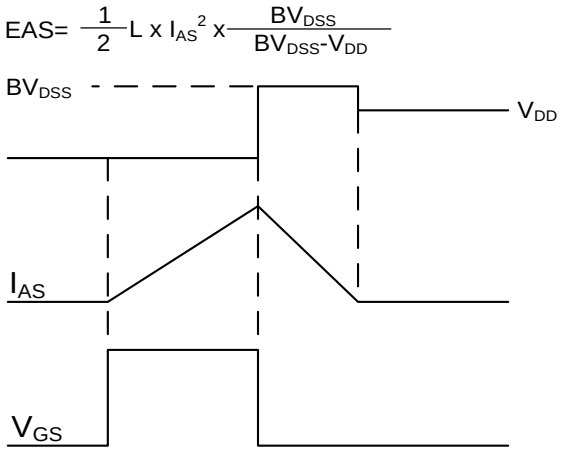


Fig.8 EAS Waveform