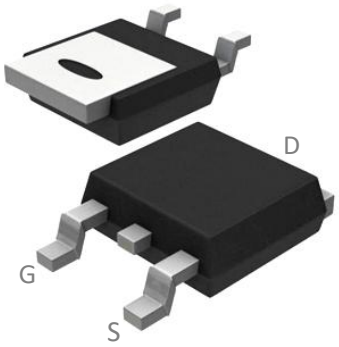
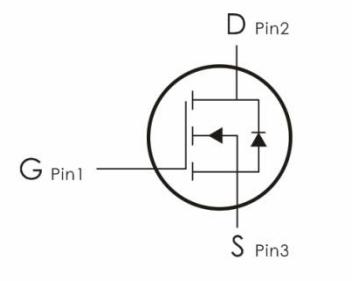
Description：

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=30A,$R_{DS(ON)}$<12m Ω @V_{GS}=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current-T_C=25℃	30	A
I_{DM}	Pulse Drain Current Tested①	120	A
P_D	Power Dissipation-T_C=25℃	52	W
E_{AS}	Single pulse avalanche energy ②	43	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	2.4	℃/W

Package Marking and Ordering Information：

Part NO.	Marking	Package
DC010NG-S	C010N-S	TO-252

Electrical Characteristics： (T_A=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
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V,T_A=25℃	---	---	1	μA
		V_{DS}=24V, V_{GS}=0V,T_A=125℃	---	---	100	nA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1	1.6	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance③	V_{GS}=10V,I_D=20A	---	8.8	12	mΩ
		V_{GS}=7V,I_D=20A	---	10	15	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	1050	---	pF
C_{oss}	Output Capacitance		---	120	---	
C_{rss}	Reverse Transfer Capacitance		---	90	---	
R_G	Gate Resistance	f=1MHz	---	9	---	Ω
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V,I_D=15A R_{GEN}=3.3Ω,V_{GS}=10V	---	3.4	---	ns
t_r	Rise Time		---	5.8	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	21	---	ns
t_f	Fall Time		---	4.6	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=15V, I_D=20A	---	6.9	---	nC
Q_{gs}	Gate-Source Charge		---	0.9	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	1.8	---	nC
Drain-Source Diode Characteristics						

I_S	Continuous Source Current	---	---	---	2	A
V_{SD}	Diode Forward Voltage③	V_{GS} =0V, I_S=2A,T_J=25℃	---	0.85	1.2	V

Notes:

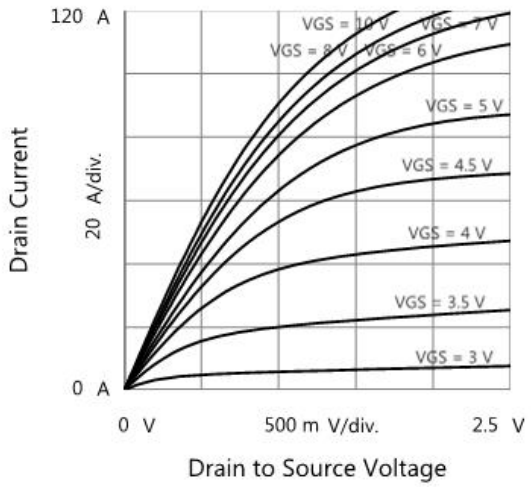
① Pulse width limited by maximum allowable junction temperature

② Limited by TJmax, starting TJ = 25°C, L = 0.3mH,RG = 25Ω, IAS = 8A, VGS =10V. Part not recommended for use above this value

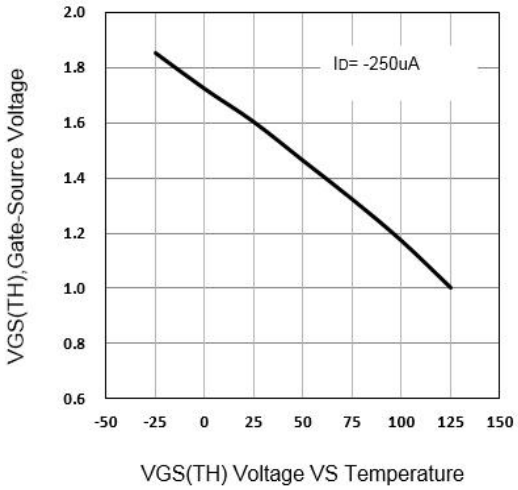
③ Pulse width ≤ 300μs; duty cycle≤ 2%

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

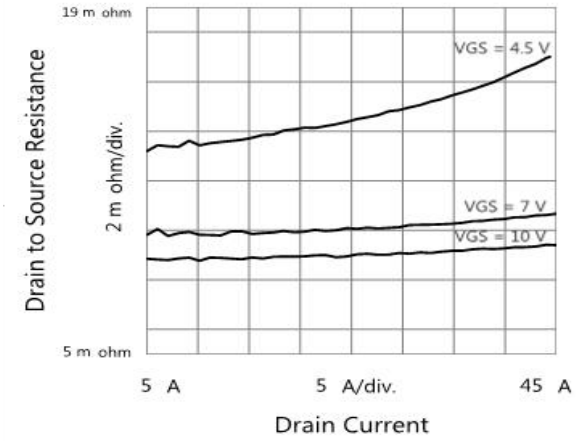
Output Characteristics



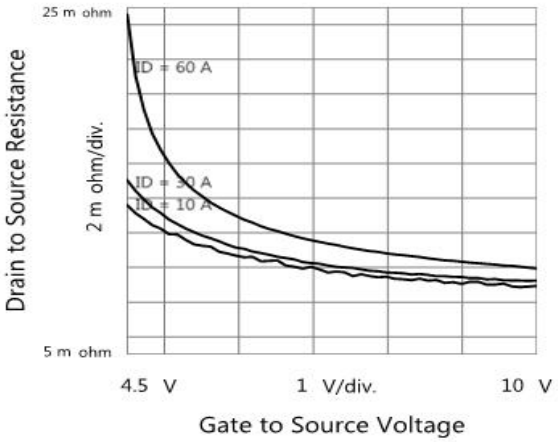
Tj-Junction Temperature



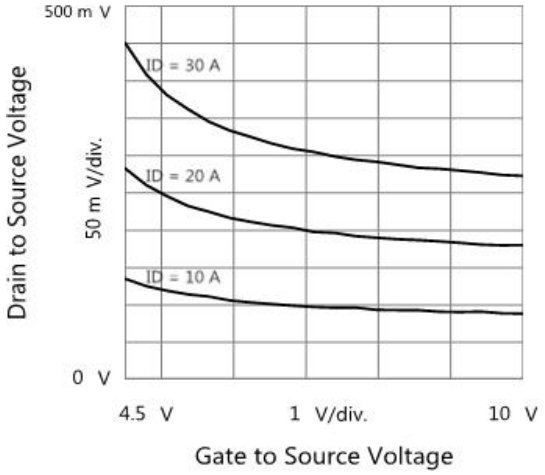
Drain to Source Resistance vs. Drain Current



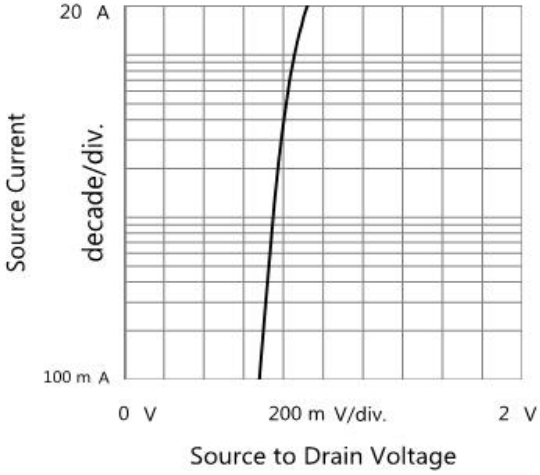
Drain to Source Resistance vs. Gate to Source Voltage



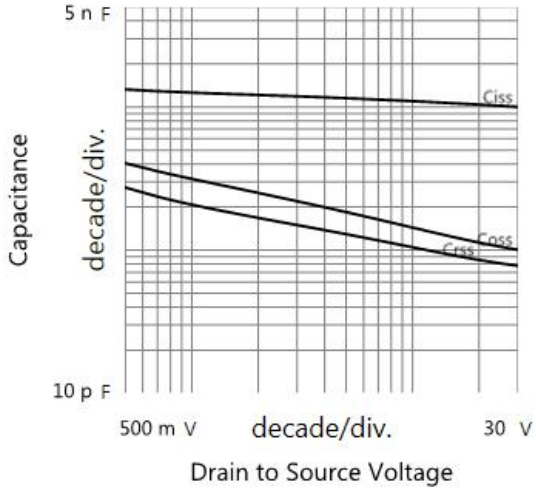
Drain to Source Voltage vs. Gate to Source Voltage



Body Diode Forward Characteristics



Capacitances



Gate Charge