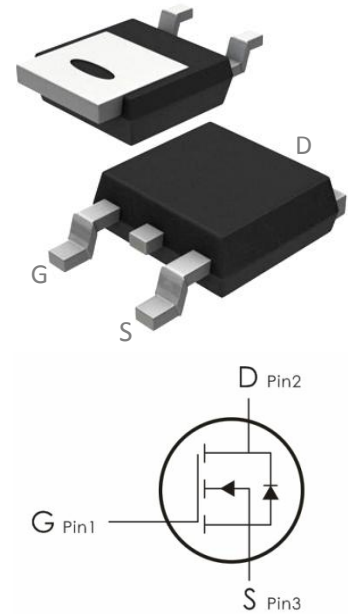


Description:

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) $V_{DS}=30V, I_D=100A, R_{DS(ON)}<5m\ \Omega$ @ $V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ 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- $T_C=25^\circ\text{C}$	100	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	63	A
I_{DM}	Drain Current - Pulsed ¹	360	A
P_D	Power Dissipation	65	W
E_{AS}	Single pulse avalanche energy ²	81	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.3	$^\circ\text{C}/\text{W}$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DC005NG-L	C005N-L	TO-252

Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	0.7	1.1	1.5	V
$R_{DS(ON)}$	Drain-Source On Resistance ³	$V_{GS}=10V, I_D=30A$	---	3.5	5	$\text{m}\Omega$
		$V_{GS}=4.5V, I_D=20A$	---	4.7	6.6	$\text{m}\Omega$
		$V_{GS}=3.3V, I_D=10A$	---	11	15	$\text{m}\Omega$
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	1699	---	pF
C_{oss}	Output Capacitance		---	319	---	
C_{rss}	Reverse Transfer Capacitance		---	299	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V$ $R_{GEN}=3\Omega, I_D=30A$	---	20	---	ns
t_r	Rise Time		---	31	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	58	---	ns
t_f	Fall Time		---	33	---	ns
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=15V,$ $I_D=30A$	---	44	---	nC
Q_{gs}	Gate-Source Charge		---	2	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	14	---	nC
Drain-Source Diode Characteristics						
I_S	Continuous Source Current	$V_G=V_D=0V$	---	---	100	A
I_{SM}	Drain Current - Pulsed	$V_G=V_D=0V$	---	---	360	A

V_{SD}	Diode Forward Voltage	V _{GS} =0V , I _D =30A	---	---	1.2	V
T_{rr}	Reverse Recovery Time	IF=30A , dI/dt=100A/μs ,	---	15	---	ns
Q_{rr}	Reverse Recovery Charge		---	4	---	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J=25°C, V_{DD}=30V, V_G=10V, L=0.5mH, R_G=25Ω, I_{AS}=18A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics:

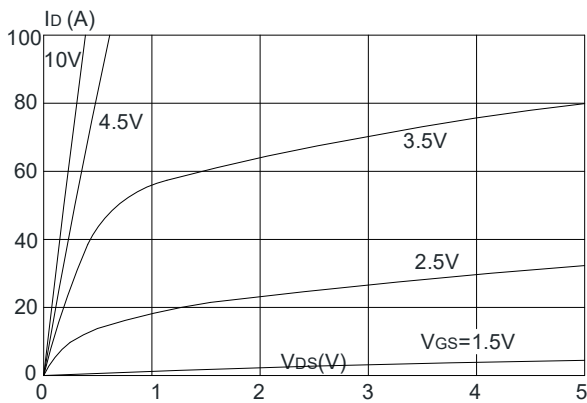


Figure 1: Output Characteristics

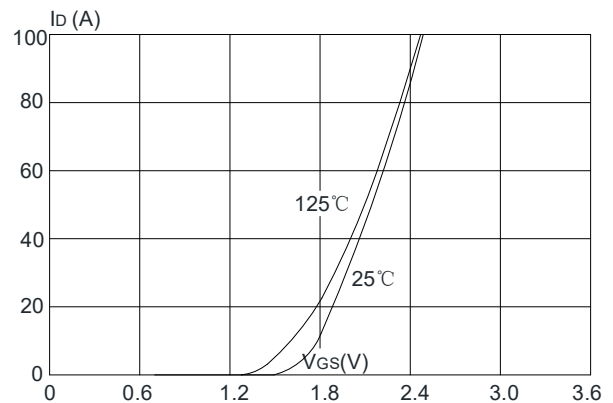


Figure 2: Typical Transfer Characteristics

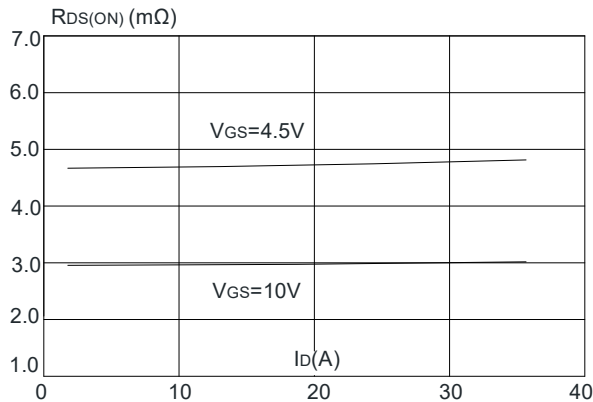


Figure 3: On-resistance vs. Drain Current

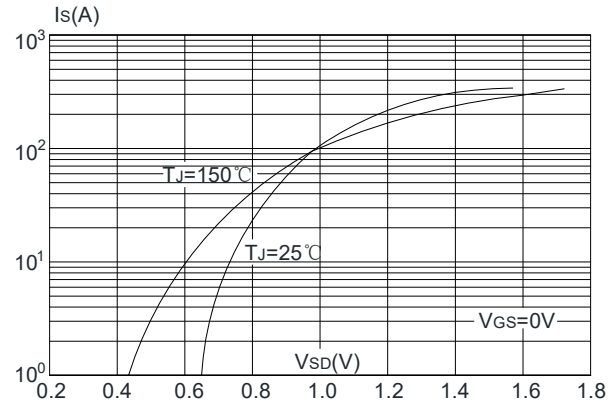


Figure 4: Body Diode Characteristics

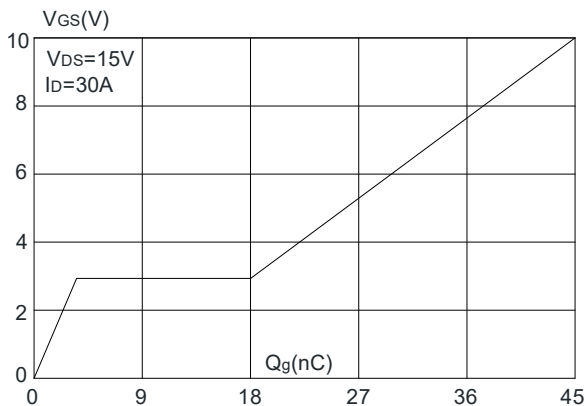


Figure 5: Gate Charge Characteristics

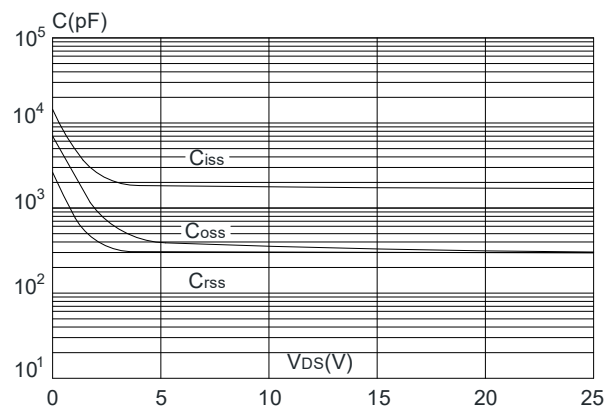


Figure 6: Capacitance Characteristics

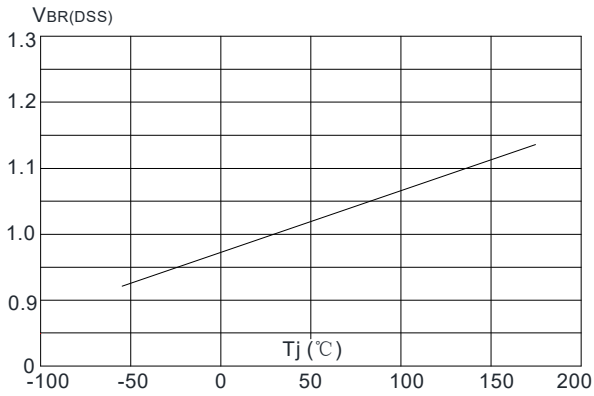


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

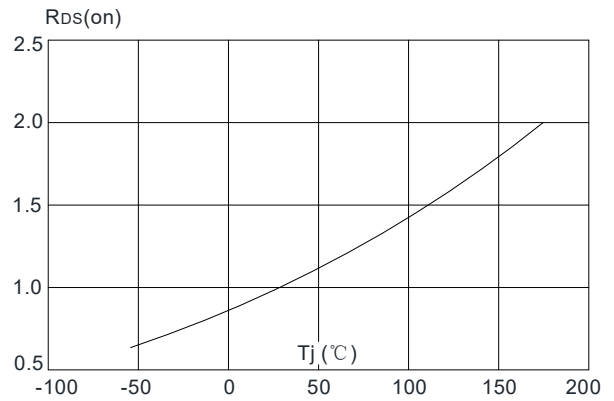


Figure 8: Normalized on Resistance vs. Junction Temperature

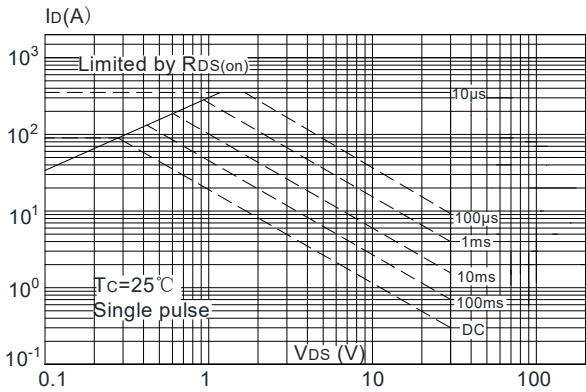


Figure 9: Maximum Safe Operating Area

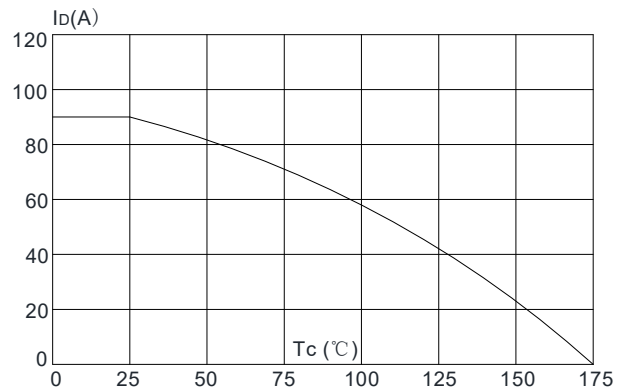


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

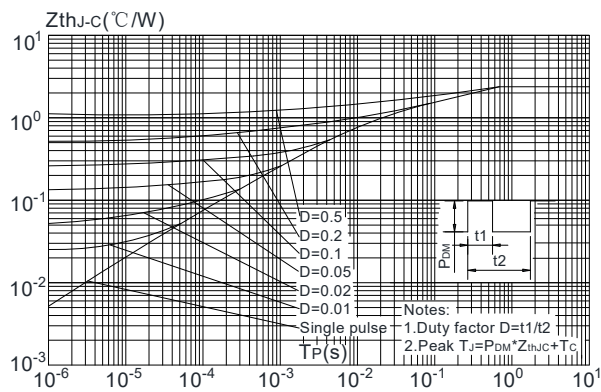


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case