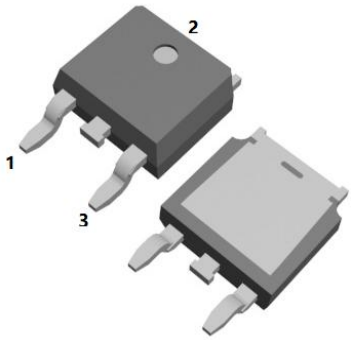
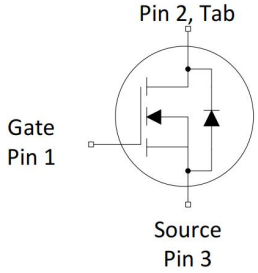
Description：

This N-Channel SiC uses advanced Planar 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}=650V,I_D=9A,$R_{DS(ON)}$<400m Ω @V_{GS}=18V（Typ：310m Ω）
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity Planar technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.
6) 0 V turn-off gate voltage can be applied

Package Marking and Ordering Information：

Part NO.	Marking	Package	Packing
D0C400N65G3A	C400N65G3A	TO- 252	2500 pcs/Reel

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage	-10/+22	V
V_{GSOP}	Recommended Operation Value	0/+15	
I_D	Continuous Drain Current[1]	9	A
	Continuous Drain Current-T_C=100℃[1]	6.3	
I_{DM}	Pulsed Drain Current [2]	18	
E_{AS}	Single pulse avalanche energy [3]	13.3	mJ
P_D	Power Dissipation	45	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+175	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	3.9	℃/W

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

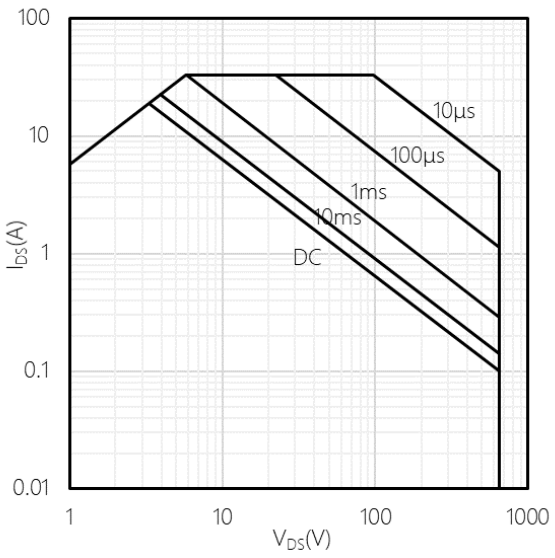
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=100μA	650	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=650V	---	---	10	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=-10/+22V, V_{DS}=0A	---	---	±250	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	3	3.8	4.5	V
$R_{DS(ON)}$	Drain-Source On Resistance [4]	V_{GS}=18V,I_D=4.5A	---	310	400	mΩ
		V_{GS}=15V,I_D=4.5A	---	440	572	mΩ
g_{fs}	Transconductance	V_{DS}=20V,I_D=4.5A	---	2.9	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=400V, V_{GS}=0V, f=1MHz	---	170	---	pF
C_{oss}	Output Capacitance		---	13.6	--	
C_{rss}	Reverse Transfer Capacitance		---	1.3	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=400V, I_D=4.5A, R_{ENG}=9.1Ω,V_{GS}=0/15V	---	17	---	ns
t_r	Rise Time		---	12	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	15	---	ns
t_f	Fall Time		---	13	---	ns
Q_g	Total Gate Charge	V_{GS}=0/15V, V_{DS}=400V, I_D=4.5A	---	9	---	nC
Q_{gs}	Gate-Source Charge		---	3.4	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	1.3	---	nC
R_G	Internal Gate Resistance	f=1MHz,V_{AC}=25mV	---	25	---	Ω

Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=2.5A	---	3.8	---	V
I_S	Continuous Drain Curren	V_D=V_G=0V	---	---	6.3	A
I_{SM}	Pulsed Drain Current		---	---	12.6	A
Trr	Reverse Recovery Time	I_{SD}=4.5A,V_{DD}=400A dI/dt=1100A/us,Includes Q_{oss}	---	9.4	---	ns
Qrr	Reverse Recovery Charge		---	23	---	nC
Trmm	Peak Reverse Recovery Current		---	4.1	---	A

Notes:

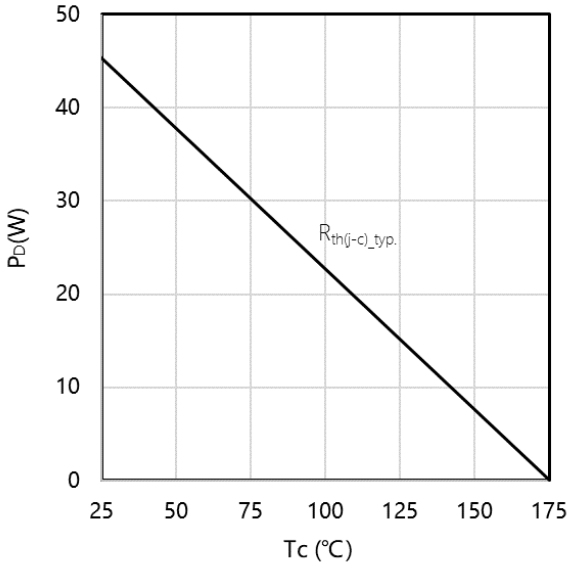
1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. EAS condition : TJ=25℃,VDD=325V,V_G=18V,L=0.5mH
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

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



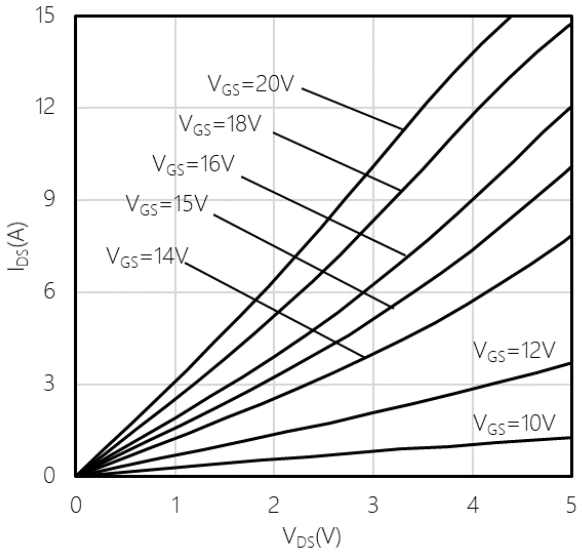
Safe operating area (SOA)

$R_{th(j-c)}$ =3.97 °C/W, Single Pulse, T_{VJ} = 25°C



Power dissipation as a function of case temperature limited by bond wire

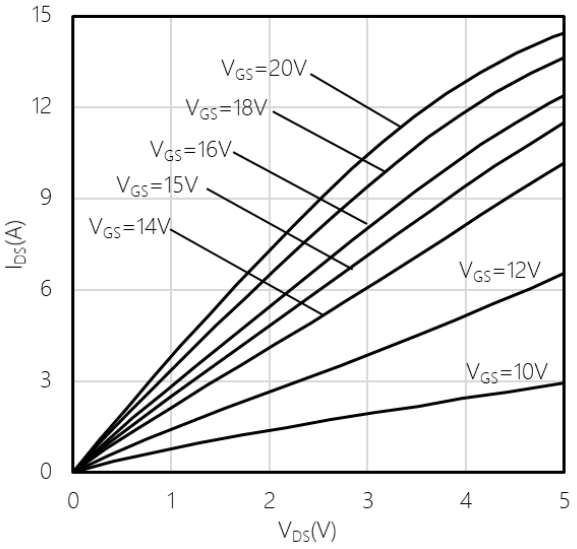
P_D = f(T_C)



Typical output characteristic, V_{GS} as parameter

I_{DS}= f(V_{DS})

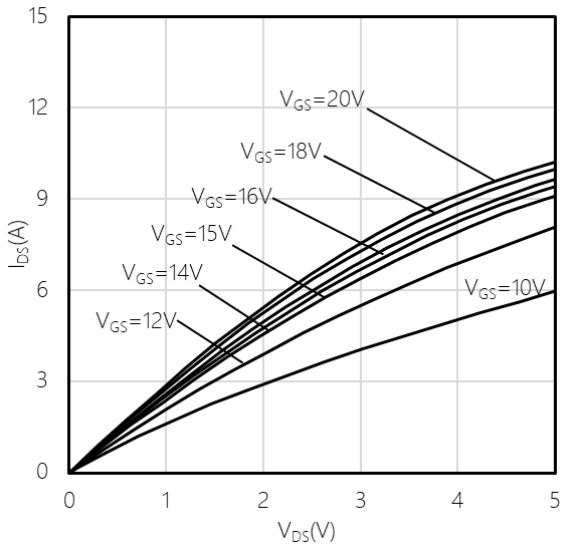
T_{VJ} = -55 ℃



Typical output characteristic, V_{GS} as parameter

I_{DS} = f(V_{DS})

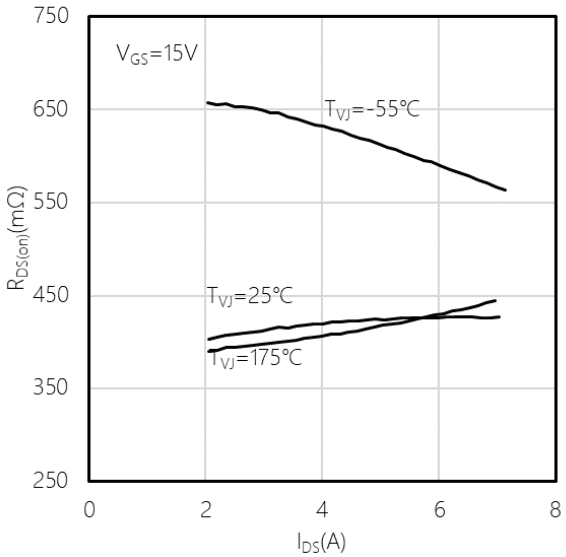
T_{VJ} = 25 ℃



Typical output characteristic, V_{GS} as parameter

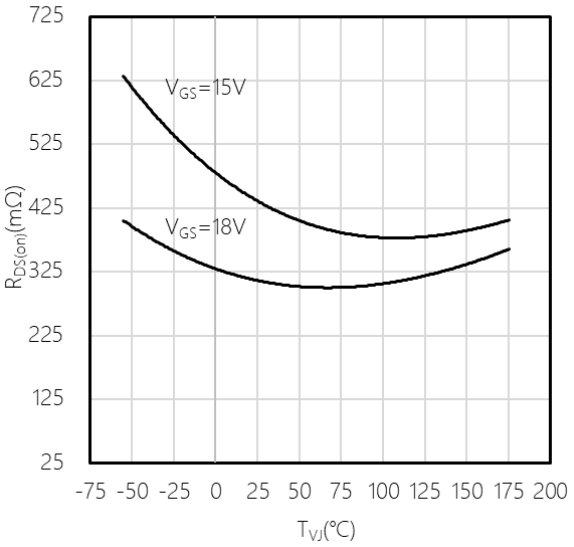
I_{DS} = f(V_{DS})

T_{VJ} = 175℃



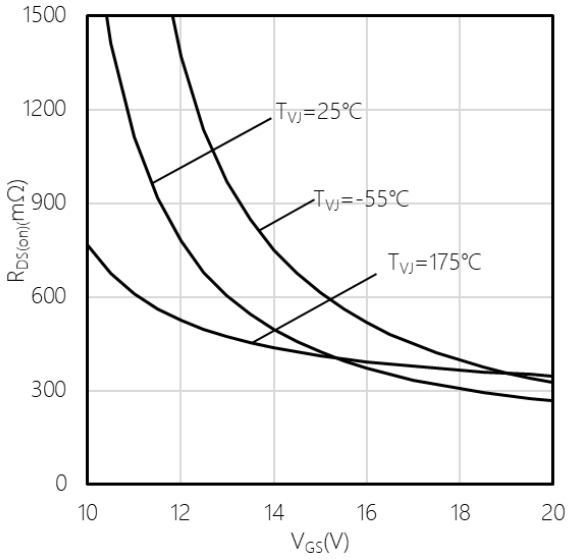
Typical on-state resistance as a function of drain current

$R_{DS(on)}$ = f(I_{DS}), V_{GS} = 15V



Typical on-state resistance as a function of temperature

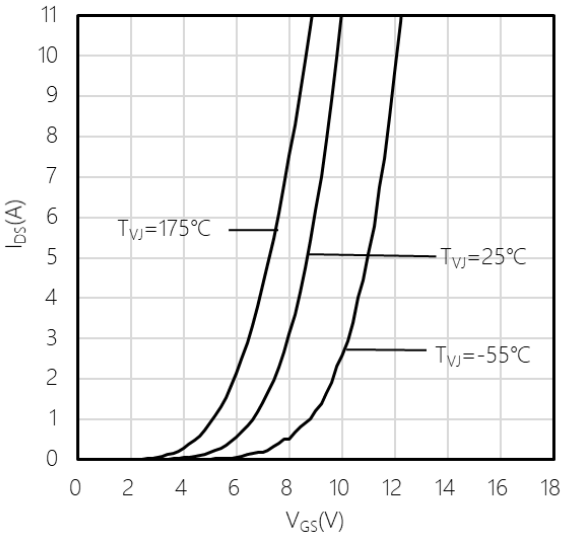
$R_{DS(on)} = f(T_{VJ})$, I_{DS} =4.5 A



Typical on-state resistance as a function of V_{GS}

$R_{DS(on)} = f(V_{GS})$

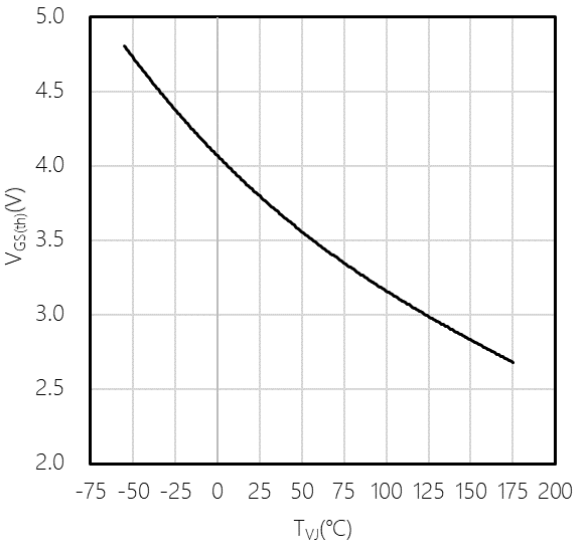
I_{DS} =4.5 A



Typical transfer characteristic

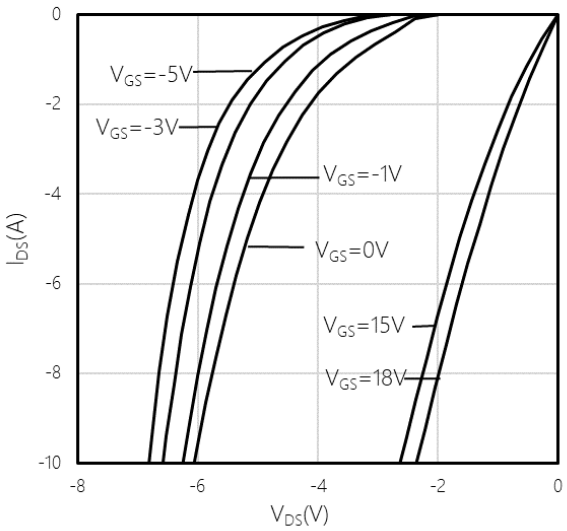
$I_{DS} = f(V_{GS})$

V_{DS}= 20 V



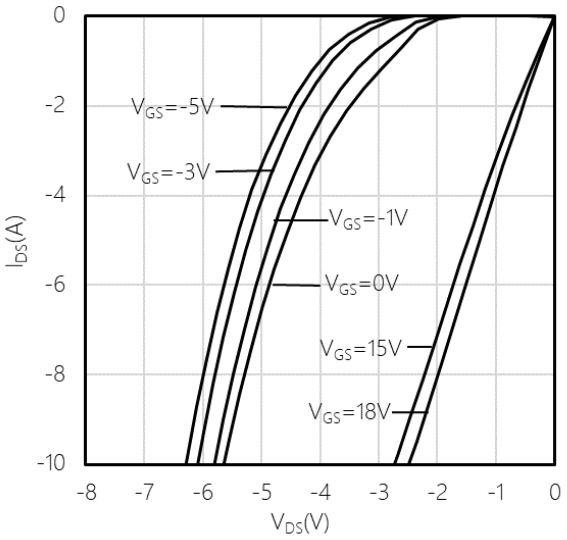
Typical gate-source threshold voltage as a function of junction temperature

$V_{GS(th)} = f(T_{VJ})$ I_{DS} = 3.5mA



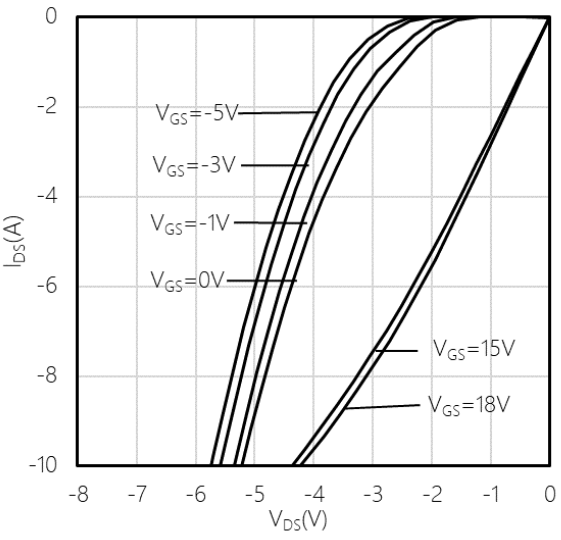
Typical reverse drain current as function of reverse drain voltage, V_{GS} as parameter

I_{DS} = f(V_{DS}), T_{VJ} = -55 °C



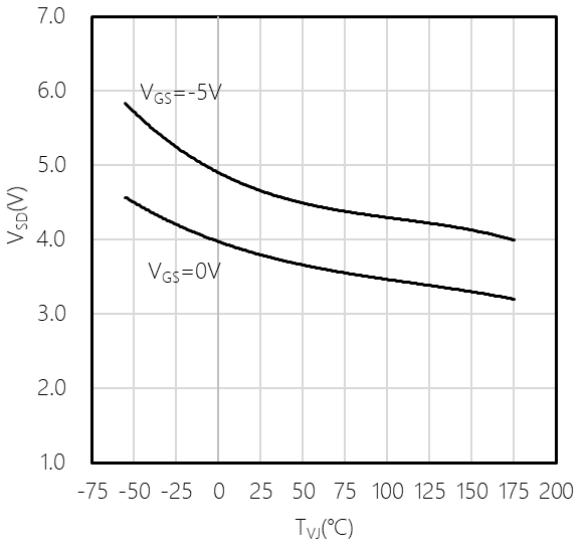
Typical reverse drain current as function of reverse drain voltage, V_{GS} as parameter

I_{DS} = f(V_{DS}), T_{VJ} = 25 °C



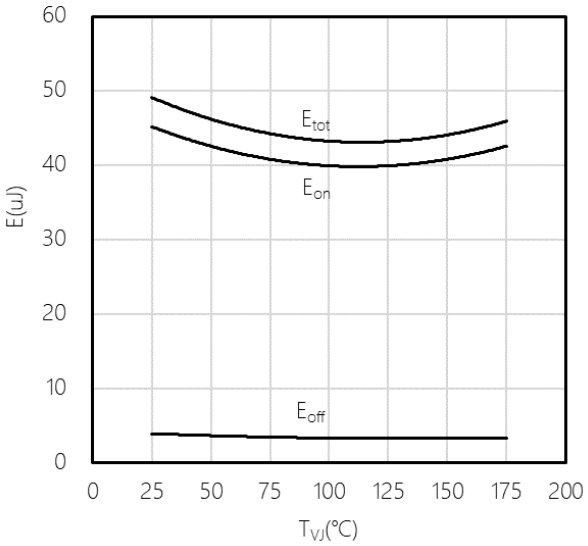
Typical reverse drain current as function of reverse drain voltage, V_{GS} as parameter

I_{DS} = f(V_{DS}) T_{VJ} = 175 °C



Typical reverse drain voltage as function of junction temperature

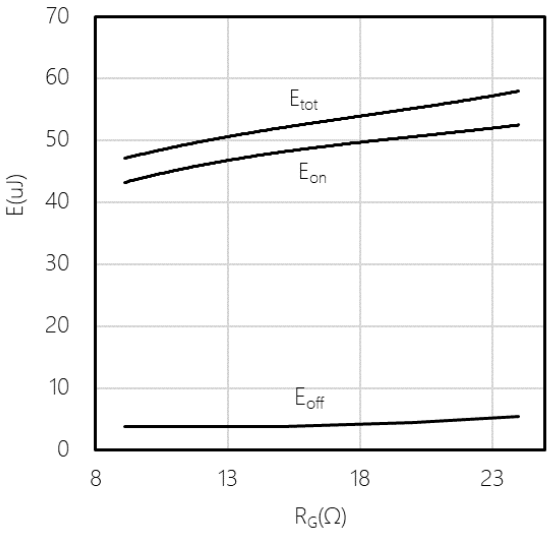
V_{SD} = f(T_{VJ}), I_{SD} = 2.5 A



Typical switching energy as a function of junction temperature, 2nd device own body diode: V_{GS} = 0 V

E = f(T_{VJ})

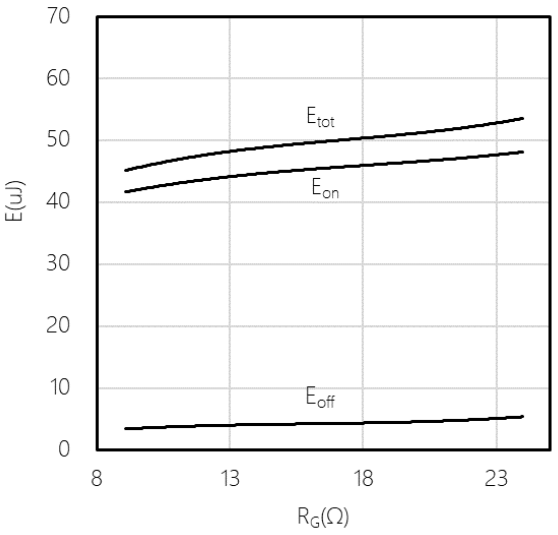
V_{DS} = 400 V, $R_{G(ext)}$ = 9.1 Ω, V_{GS} = 0V / 15 V, I_{DS} = 4.5 A



Typical switching energy losses as a function of gate resistance, 2nd device own body diode: V_{GS} = 0 V

E = f($R_{G(ext)}$)

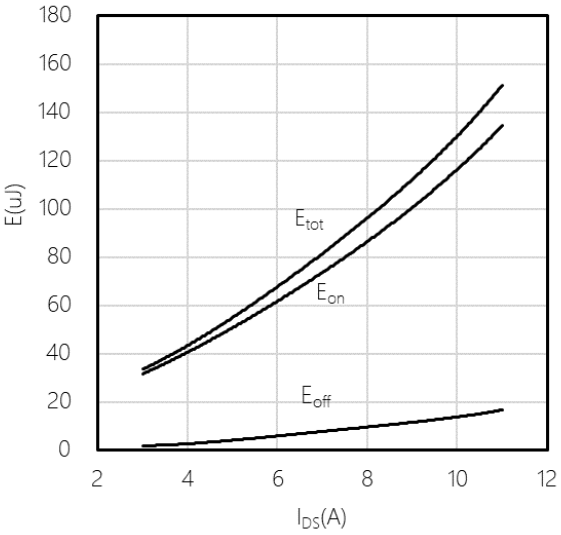
V_{GS} = 0/15 V, I_{DS} = 4.5 A, T_{VJ} = 25 °C, V_{DS} = 400 V



Typical switching energy losses as a function of gate resistance, 2nd device own body diode: V_{GS} = 0 V

E = f($R_{G(ext)}$)

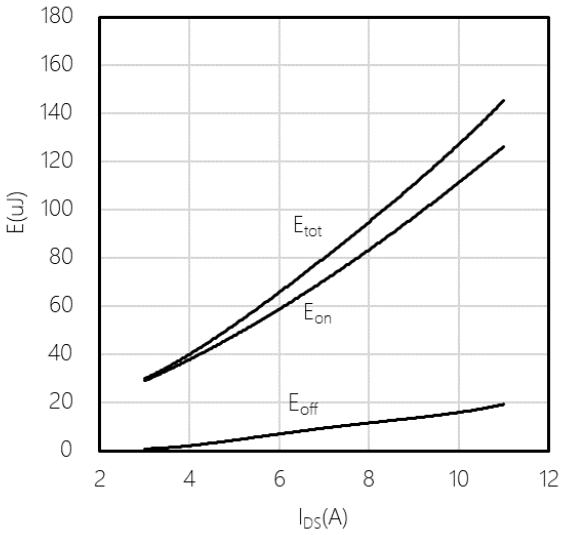
V_{GS} = 0/15 V, I_{DS} = 4 .5A, T_{VJ} = 175 °C, V_{DS} = 400 V



Typical switching energy losses as a function of I_{DS}, 2nd device own body diode: V_{GS} = 0 V

E = f(I_{DS})

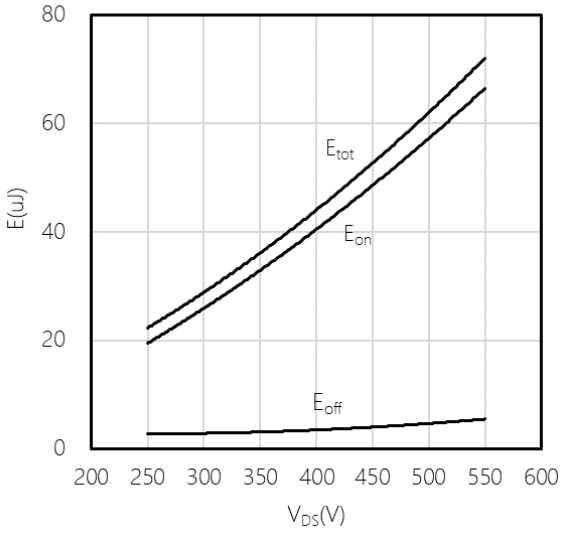
V_{GS} = 0/15 V, $R_{G(ext)}$ = 9.1 Ω T_{VJ} = 25 °C, V_{DS} = 400 V



Typical switching energy losses as a function of I_{DS}, 2nd device own body diode: V_{GS} = 0 V

E = f(I_{DS})

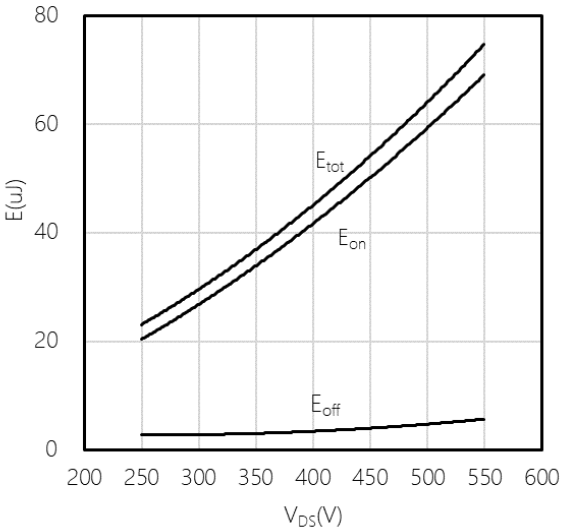
V_{GS} = 0/15 V, $R_{G(ext)}$ = 9.1 Ω T_{VJ} = 175 °C, V_{DS} = 400 V



Typical switching energy losses as a function of V_{DS}, 2nd device own body diode: V_{GS} = 0 V

E = f(V_{DS})

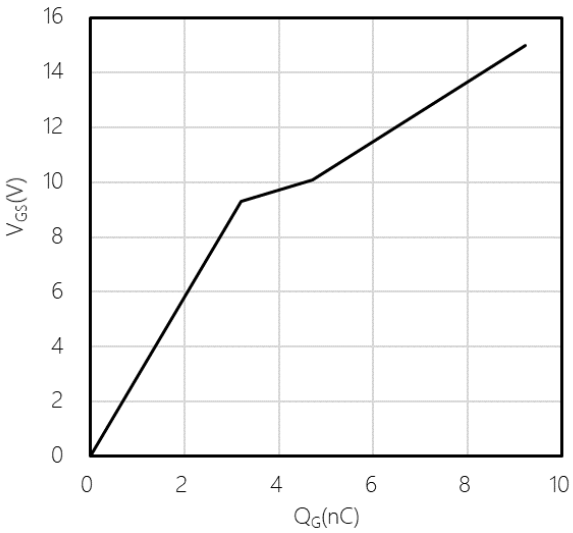
V_{GS} = 0/15 V, $R_{G(ext)}$ = 9.1 Ω T_{VJ} = 25 °C, I_{DS} = 4.5 A



Typical switching energy losses as a function of V_{DS}, 2nd device own body diode: V_{GS} = 0 V

E = f(V_{DS})

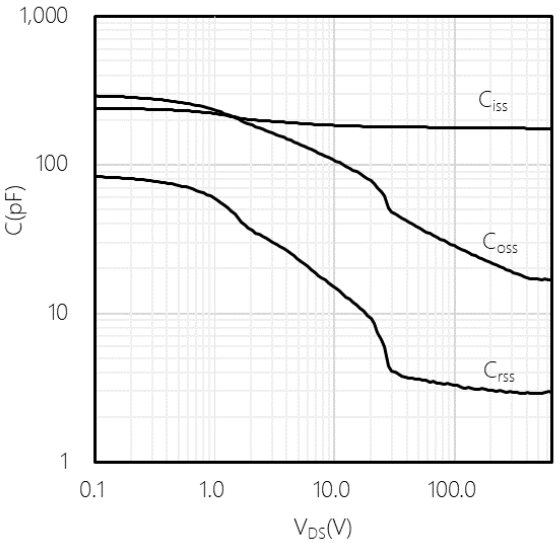
V_{GS} = 0/15 V, $R_{G(ext)}$ = 9.1 Ω T_{VJ} = 175 °C, I_{DS} = 4.5 A



Typical gate charge

V_{GS} =f(Q_G), I_{DS} = 4.5A, V_{DS} = 400V

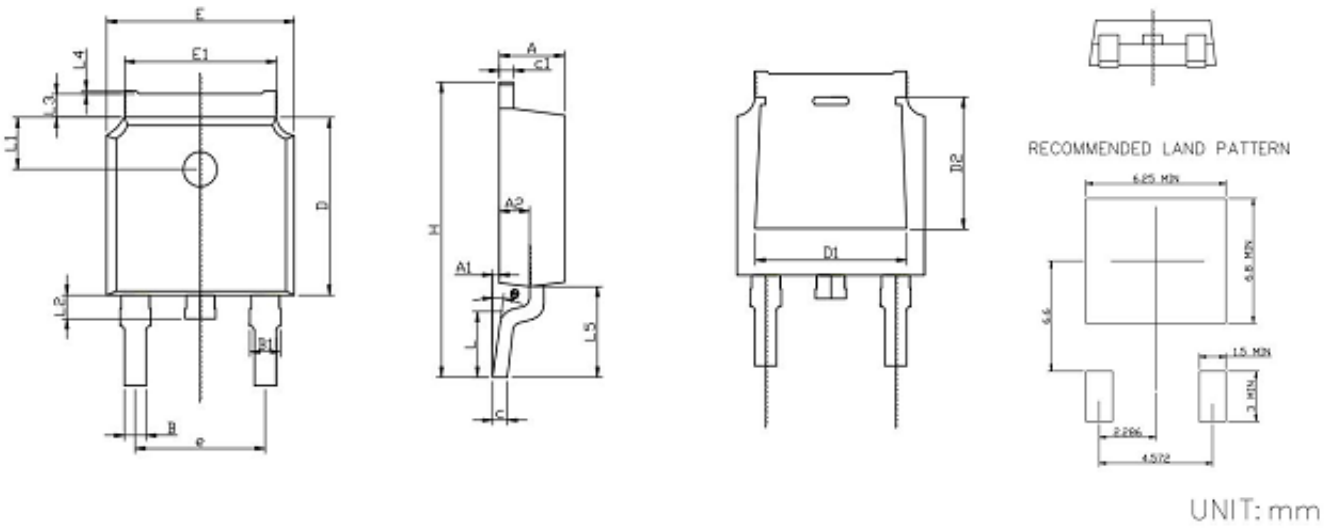
turn-on pulse



Typical capacitance as a function of drain-source voltage

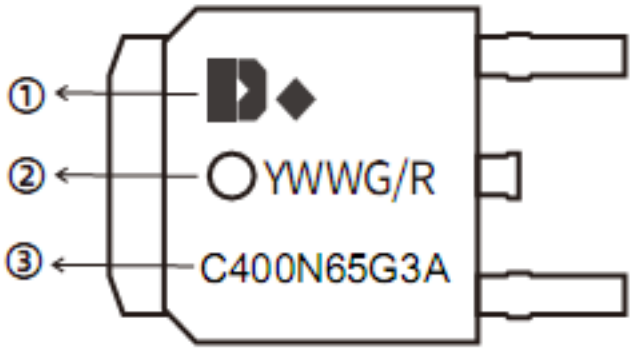
C = f(V_{DS}), V_{GS} = 0V, f = 1MHz

Package Outline: TO-252



SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.15	2.45	0.085	0.096
A1	0.05	0.20	0.002	0.008
A2	0.91	1.22	0.036	0.048
B	0.66	0.86	0.026	0.034
B1	0.93	1.23	0.037	0.048
C	0.40	0.60	0.016	0.024
C1	0.40	0.60	0.016	0.024
D	5.95	6.25	0.234	0.246
D1	4.80		0.189	
D2	3.80		0.150	
E	6.45	6.75	0.254	0.266
E1	5.12	5.52	0.202	0.217
L	1.65		0.065	
L1	1.58	1.98	0.062	0.078
L2	0.60	1.00	0.024	0.039
L3	0.70	1.00	0.028	0.039
L4	0.00	0.20	0.000	0.008
L5	2.80	3.40	0.110	0.134
H	9.80	10.40	0.386	0.409
θ	0.00	8.00	0.000	0.315
e	4.57		0.180	

Marking Information:



①. Doingter LOGO

②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)

③. Part NO.

Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2026-04-29	Release of final version

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