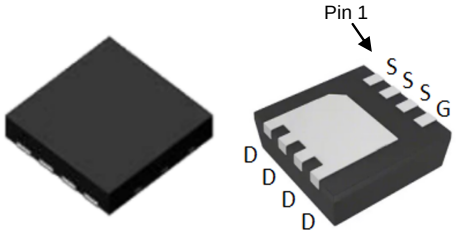
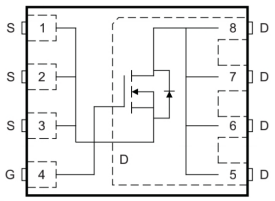
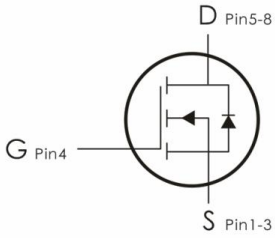
Description：

This N-Channel MOSFET uses advanced SGT 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=170A,$R_{DS(ON)}$<1.3mΩ @V_{GS}=10V（Typ：1mΩ）
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity SGT technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.
6) MSL3

Package Marking and Ordering Information：

Part NO.	Marking	Package	Packing
YC1R3TG-PL	C1R3T-PL	TDFN3333-8	3000 pcs/Reel

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	Continuous Drain Current[1]	170	A
	Continuous Drain Current-T_C=100℃[1]	119	
I_{DM}	Pulsed Drain Current [2]	680	
P_D	Power Dissipation	313	W
E_{AS}	Single pulse avalanche energy [3]	198	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	0.4	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	50	℃/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=250μA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=30V	---	---	1	μA
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	1.3	2	V
$R_{DS(ON)}$	Drain-Source On Resistance[4]	V_{GS}=10V,I_D=20A	---	1	1.3	mΩ
		V_{GS}=4.5V,I_D=10A	---	1.6	2	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=20V, V_{GS}=0V, f=1MHz	---	3400	---	pF
C_{oss}	Output Capacitance		---	1554	--	
C_{rss}	Reverse Transfer Capacitance		---	86	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=20V, I_D=30A R_{ENG}=1.6Ω,V_{GS}=10V	---	17.4	---	ns
t_r	Rise Time		---	4.1	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	54.6	---	ns
t_f	Fall Time		---	11	---	ns
Q_g	Total Gate Charge	V_{DS}=20V,I_D=30A V_{GS}=10V	---	39.8	---	nC
Q_{gs}	Gate-Source Charge		---	8	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	5.9	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=30A	---	---	1.2	V
I_S	Continuous Drain Curren	V_D=V_G=0V	---	---	141.6	A
I_{SM}	Pulsed Drain Current		---	---	566.6	A
Trr	Reverse Recovery Time	I_F=30A, dI/dt=100A/us	---	85	---	ns
Qrr	Reverse Recovery Charge		---	34	---	nC

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=15V,V_G=10V,L=0.1mH
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

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

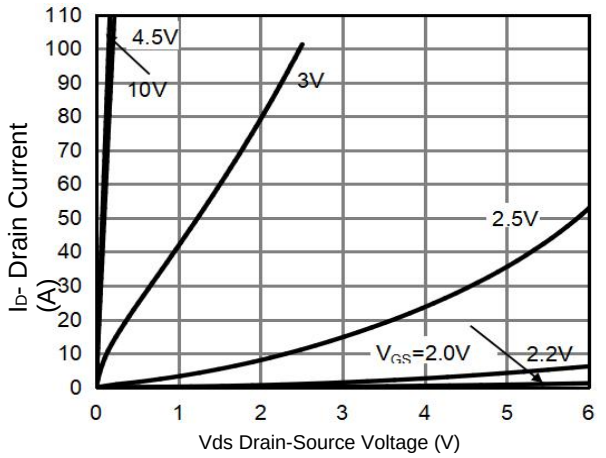


Fig 1: Output Characteristics

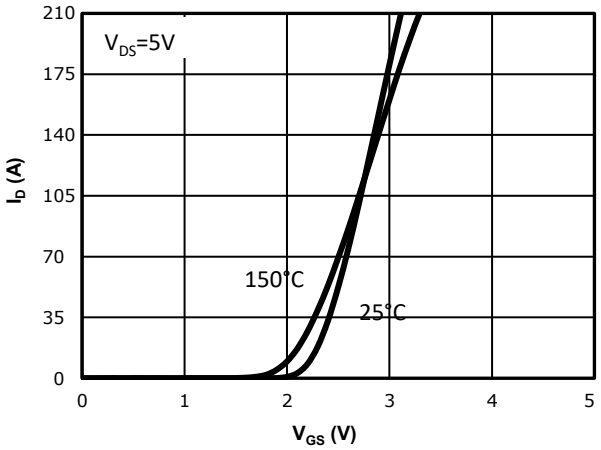


Fig 2: Transfer Characteristics

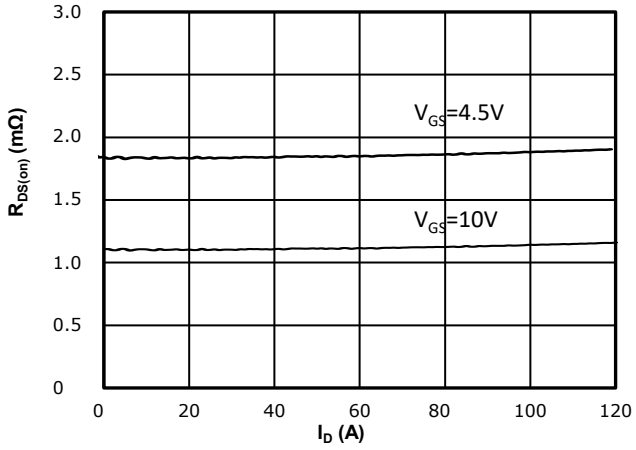


Fig 3: Rds(on) vs Drain Current and Gate Voltage

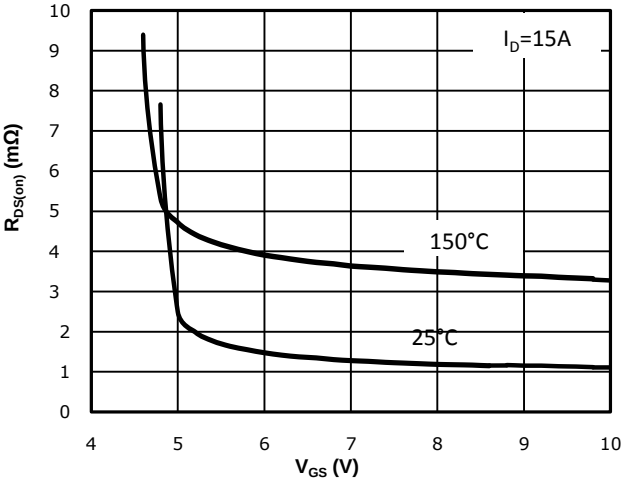


Fig 4: Rds(on) vs Gate Voltage

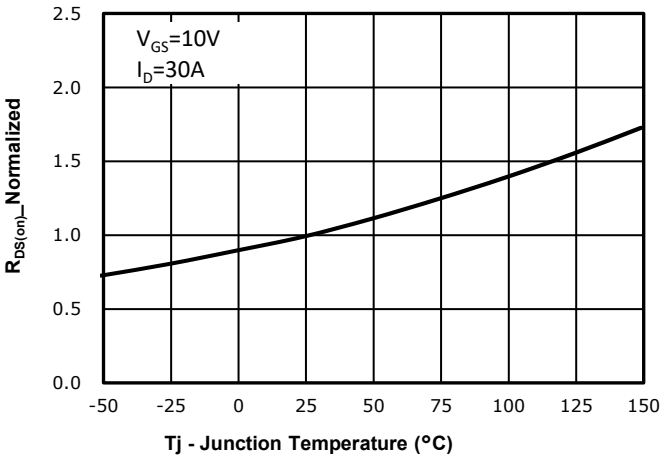


Fig 5: Rds(on) vs. Temperature

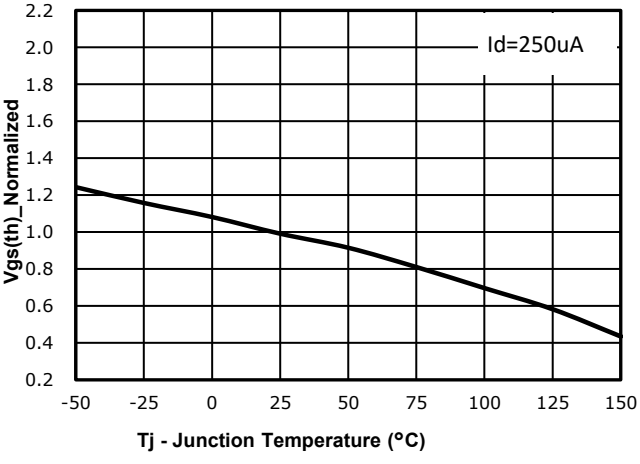


Fig 6: Vgs(th) vs. Temperature

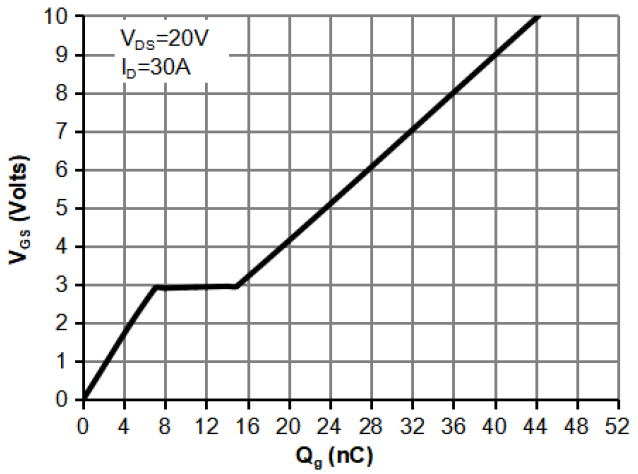


Fig 7: Gate ChargeCharacteristics

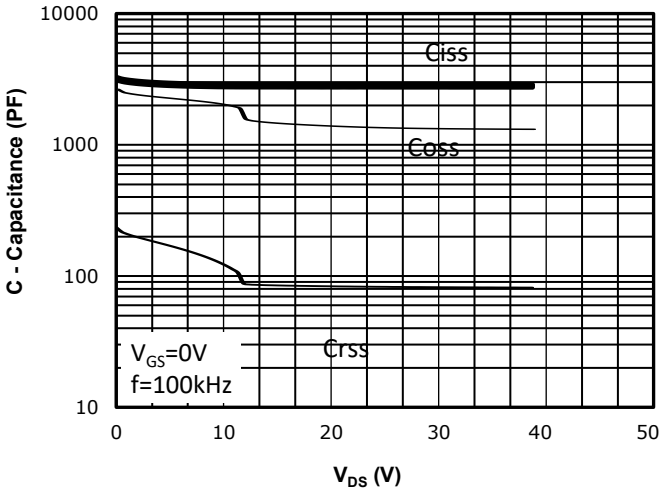


Fig 8: Capacitance Characteristics

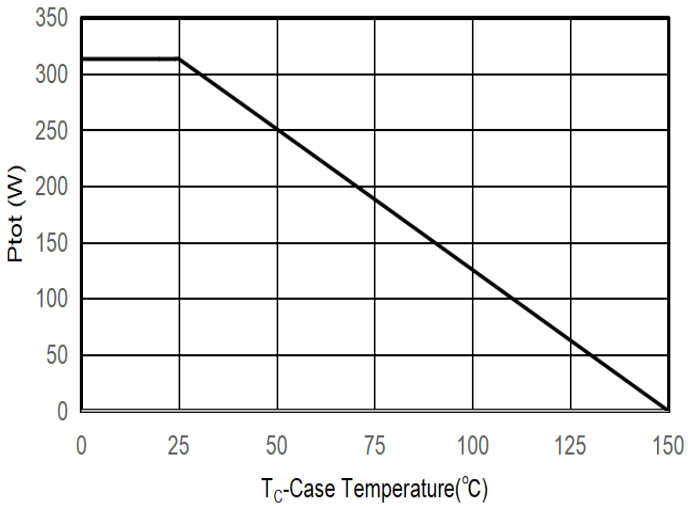


Fig 9: Power Dissipation

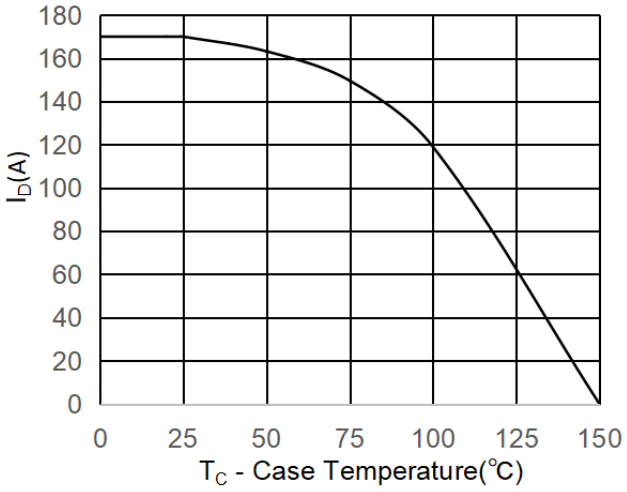


Fig 10: Drain Current Derating

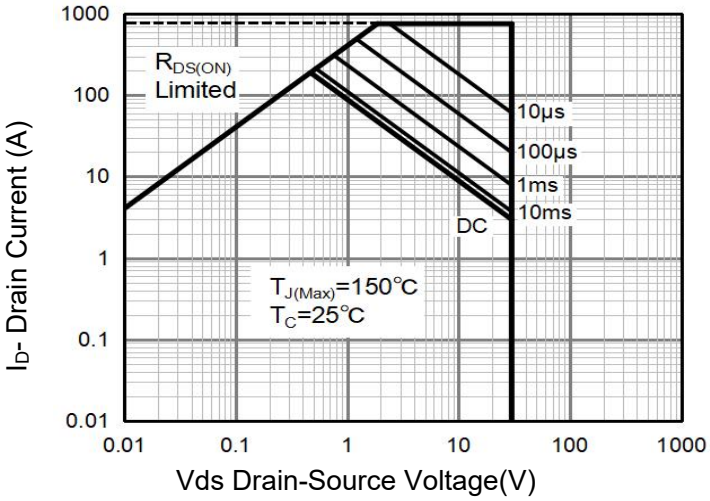
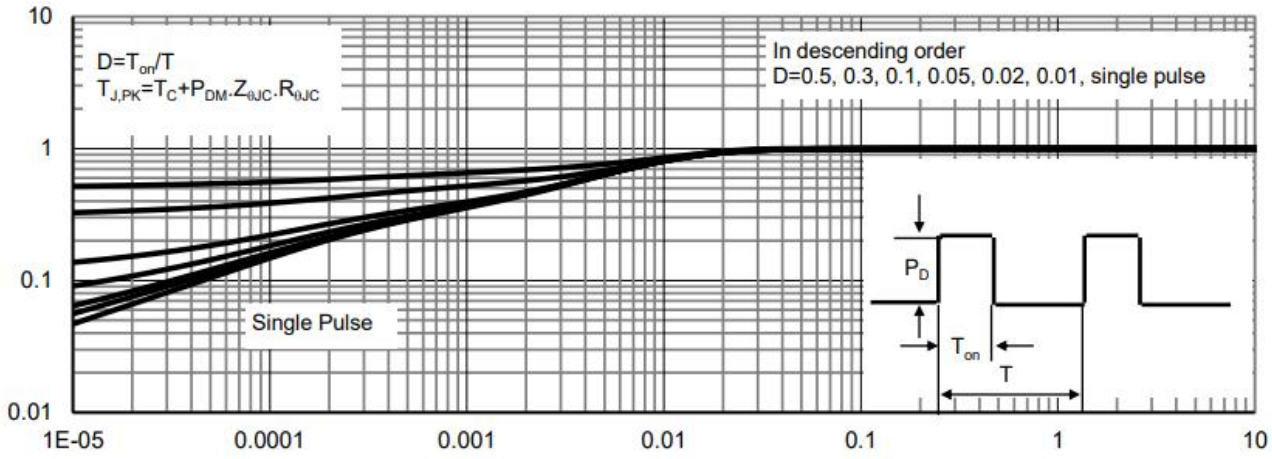


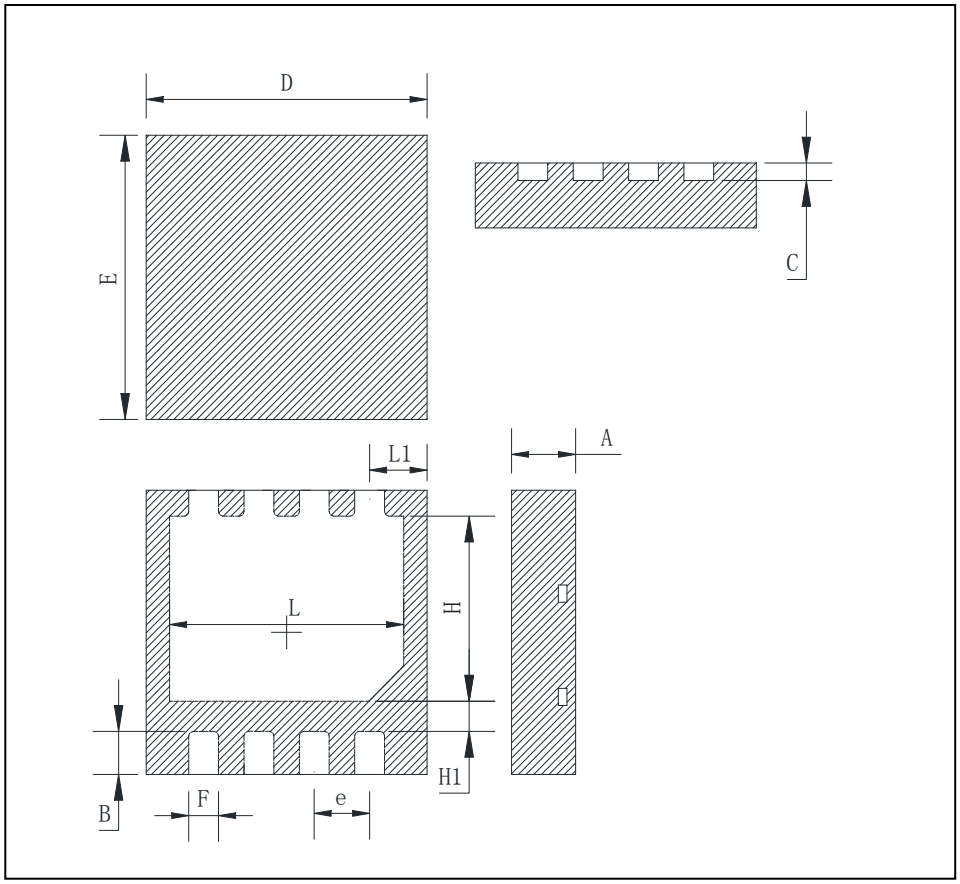
Figure 11 Safe Operation Area



Square Wave Pluse Duration(sec)

Figure 12 Normalized Maximum Transient Thermal Impedance

TDFN3333-8 Package Information：



UNIT: mm

Symbol	Min	Typ	Max
A	0.70	0.75	0.80
B	0.40	0.50	0.60
C	0.153	0.203	0.253
D	3.20	3.30	3.40
E	3.20	3.30	3.40
e	0.60	0.65	0.70
F	0.30	0.35	0.40
H	2.05	2.15	2.25
H1	0.25	0.35	0.45
L	2.65	2.75	2.85
L1	0.575	0.675	0.775

Marking Information：

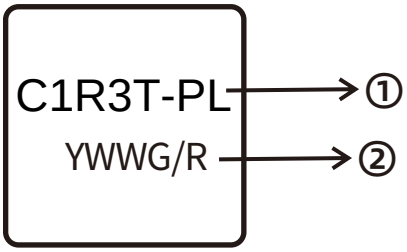
①. Part NO.

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)



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2026-01-10	Release of final version

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