

N-Channel 30V(D-S) MOSFET

Product summary		
V_{DS}	30	V
$R_{DS(ON)}$ (at $V_{GS}=10V$) Typ.	2.8	mΩ
$R_{DS(ON)}$ (at $V_{GS}=4.5V$) Typ.	3.6	mΩ
$I_D(T_C=25^{\circ}C)$	104	A

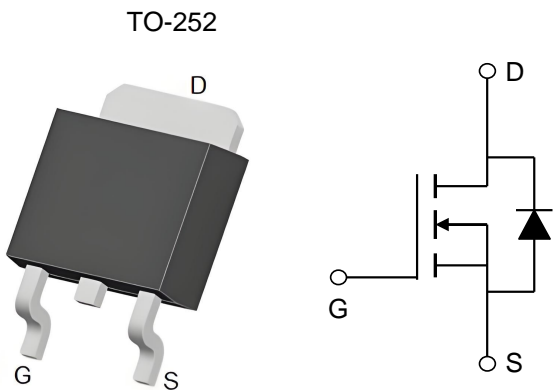
Features

- Low $R_{DS(on)}$
- Reliable and Rugged
- RoHS Compliant & Halogen-Free

Applications

- Power Management in Desktop Computer or DC/DC Converters

Pin Configuration



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECG30N100C	TO-252	13"	2500pcs

Absolute Maximum Ratings (at $T_A=25^{\circ}C$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current at $V_{GS}=10V$	$T_C=25^{\circ}C$	104	A
		$T_C=100^{\circ}C$	66	A
I_{DM}	Pulse Drain Current Tested		122	A
P_D	Power Dissipation	$T_C=25^{\circ}C$	60	W
T_J, T_{STG}	Junction and Storage Temperature Range		-55 to 150	$^{\circ}C$

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient	50	$^{\circ}C/W$

Electrical Characteristics (at $T_J = 25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V,I _D =250uA	30	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V,V _{GS} =0V	--	--	1	uA
I _{GSS}	Gate-Body Leakage Current	V _{DS} =0V,V _{GS} =±20V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250uA	1.0	1.5	2.0	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V,I _D =20A	--	2.8	3.7	mΩ
		V _{GS} =4.5V,I _D =12A	--	3.6	5.4	mΩ
gfs	Forward Transconductance	V _{GS} =20V,I _D =5A	--	30	--	S
Dynamic Parameters						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V f=1MHZ	--	3.9	--	Ω
C _{iss}	Input Capacitance	V _{GS} =0V,V _{DS} =15V f=1MHZ	--	2120	--	pF
C _{oss}	Output Capacitance		--	367	--	pF
C _{rss}	Reverse Transfer Capacitance		--	223	--	pF
Q _g	Total Gate Charge	V _{DS} =15V,I _D =18A V _{GS} =10V	--	42	--	nC
Q _{gs}	Gate-Source Charge		--	6.2	--	nC
Q _{gd}	Gate-Drain Charge		--	9.1	--	nC
t _{D(on)}	Turn-on Delay Time	V _{DD} =15V,I _D =1A R _G =6Ω,V _{GS} =10V	--	16	--	nS
t _r	Turn-on Rise Time		--	21	--	nS
t _{D(off)}	Turn-off Delay Time		--	72	--	nS
t _f	Turn-off Fall Time		--	21	--	nS
Source-Drain Parameters						
V _{SD}	Forward Voltage	I _{SD} =15A,V _{GS} =0V	--	--	1.1	V
t _{rr}	Reverse Recovery Time	I _F =15A di/dt=100A/us	--	15	--	nS
Q _{rr}	Reverse Recovery Charge		--	8	--	nC

Typical Characteristics

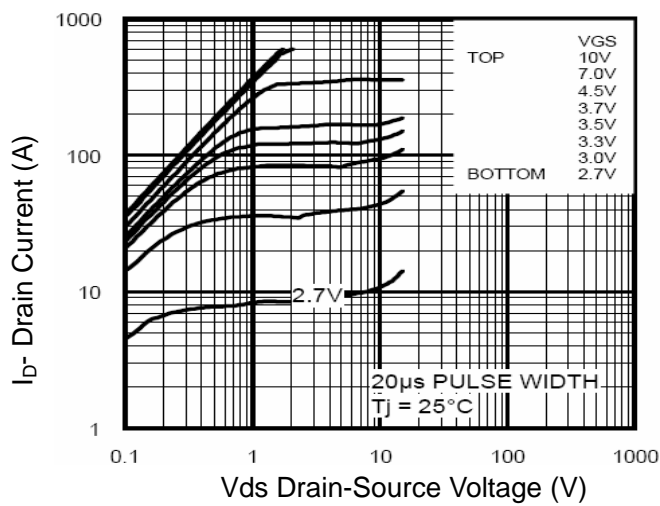


Figure 1 Output Characteristics

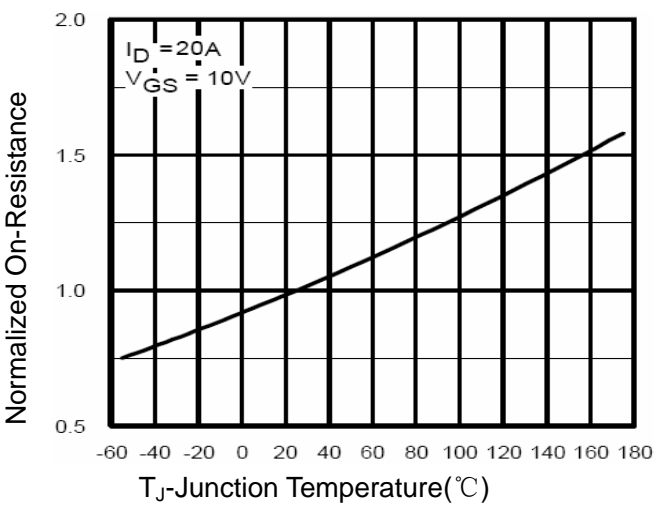


Figure 4 Rdson-Junction Temperature

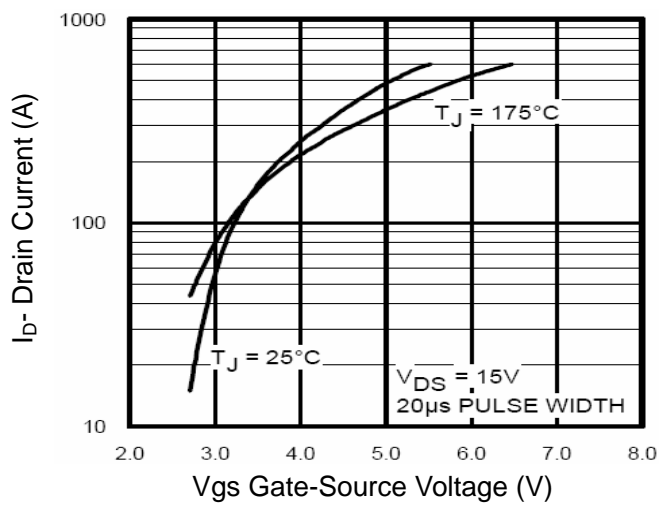


Figure 2 Transfer Characteristics

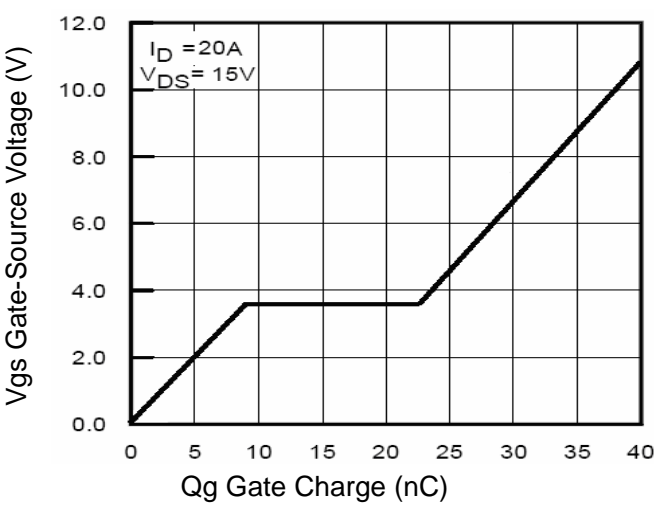


Figure 5 Gate Charge

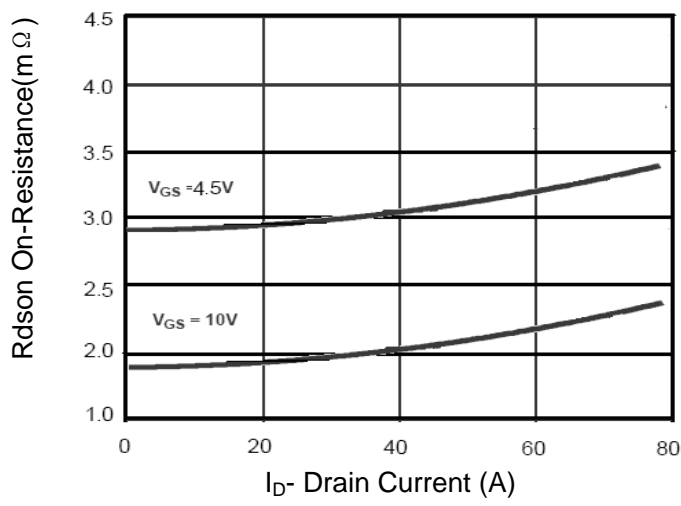


Figure 3 Rdson- Drain Current

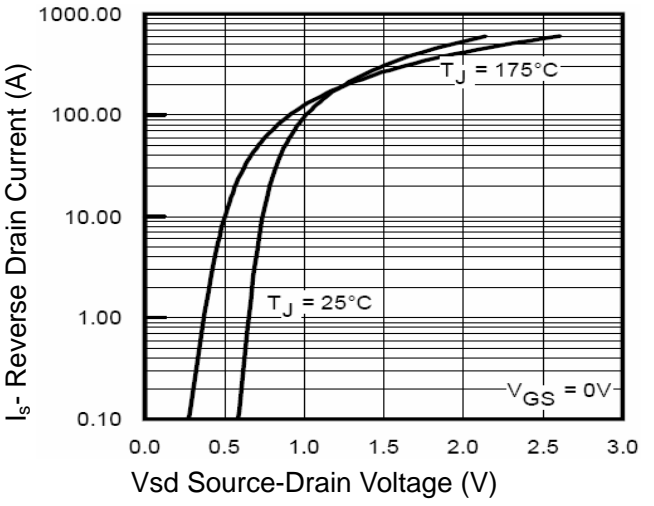


Figure 6 Source- Drain Diode Forward

Typical Characteristics

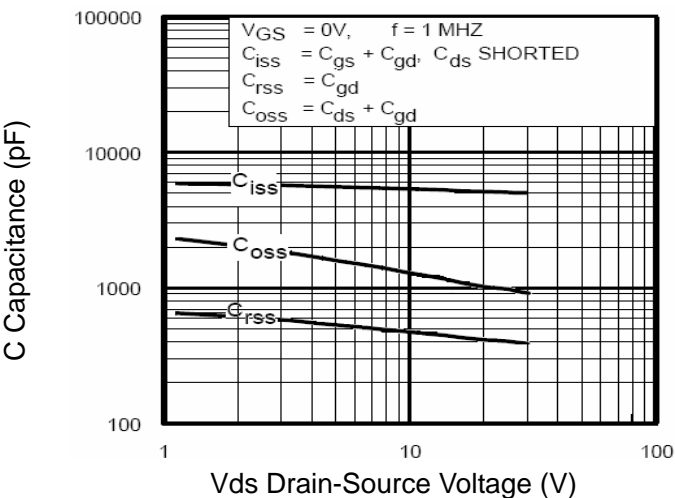


Figure 7 Capacitance vs Vds

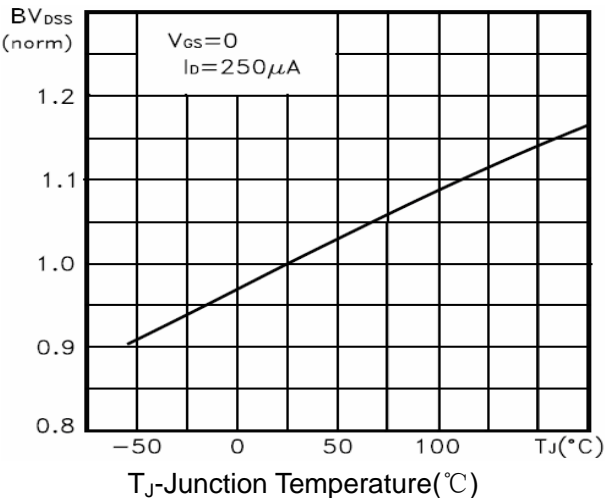


Figure 9 BV_{DSS} vs Junction Temperature

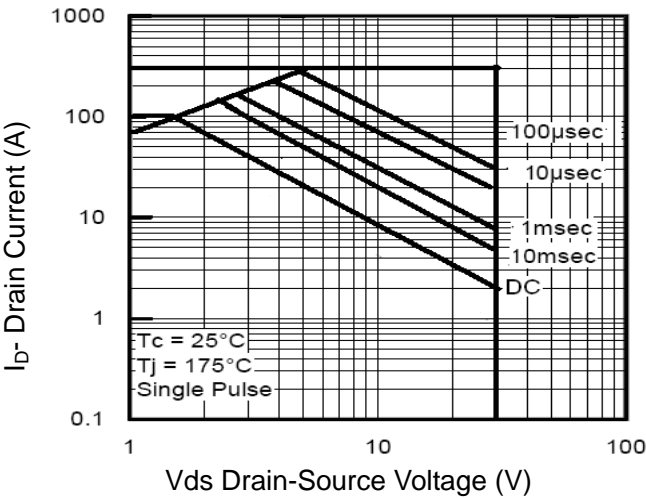


Figure 8 Safe Operation Area

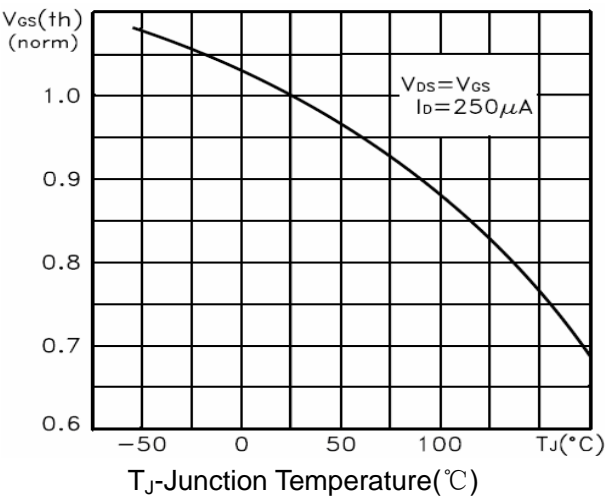


Figure 10 $V_{GS(th)}$ vs Junction Temperature

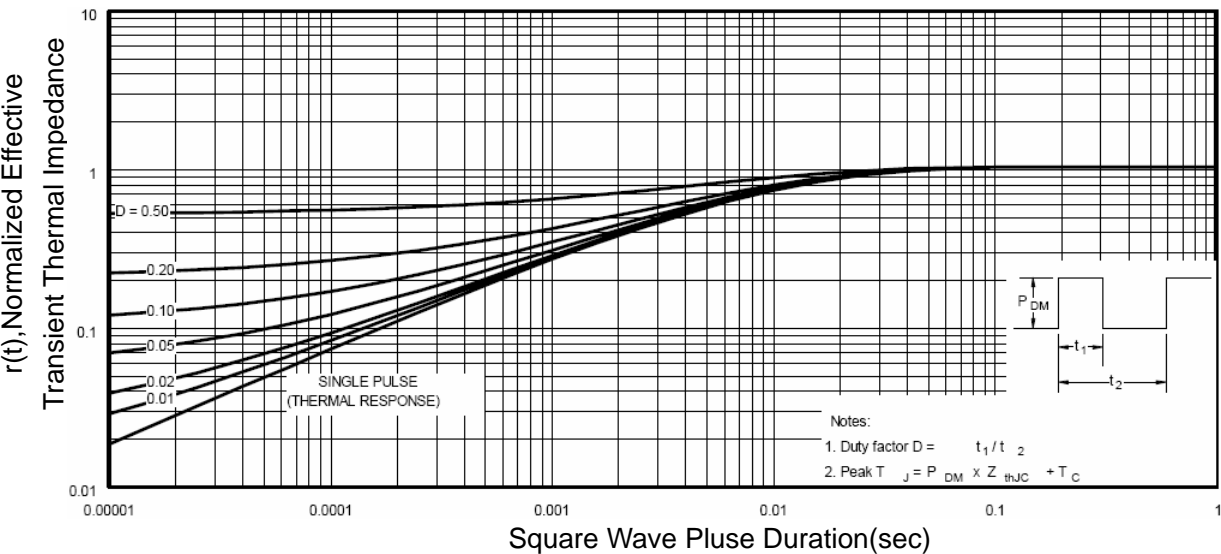
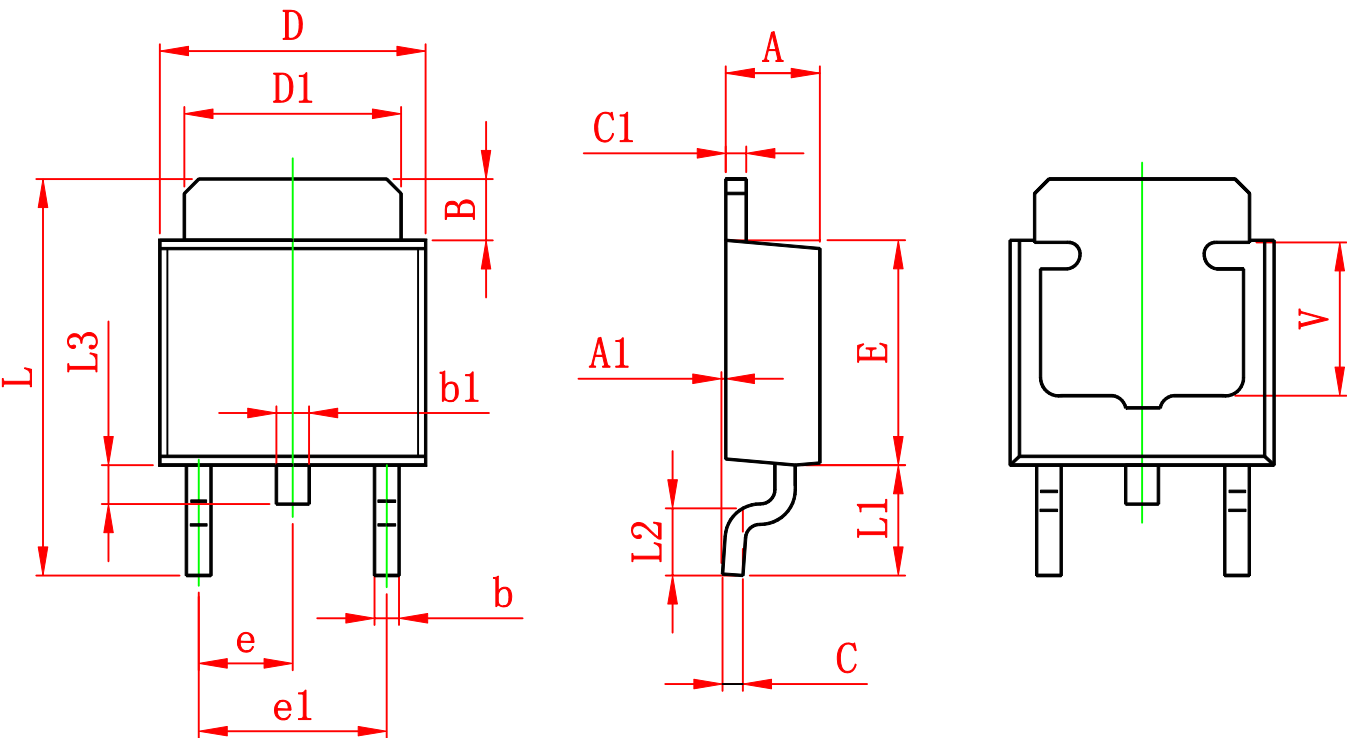


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	9.500	9.900	0.374	0.390
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.600	0.900	0.024	0.035
V	3.800 REF.		0.150 REF.	