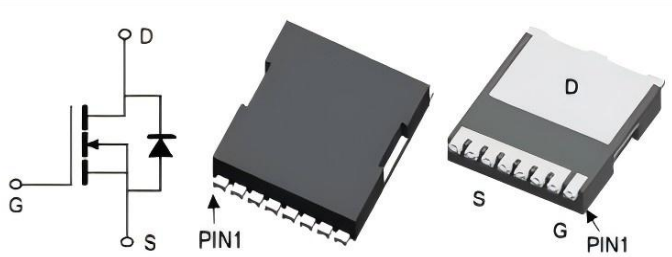
N-Channel Power MOSFET 40V/330A

Parameter	Value	Unit
V_{DS}	40	V
I_D	330	A
$R_{DS(on)}$	0.9	mΩ



TOLL

FEATURES

- Ultra Low Gate Charge cause lower driving requirements
- 100%Avalanche Tested

APPLICATIONS

- DC/DC Converter
- Motor control and drives
- Battery management

MAXIMUM RATED VALUES(at TC=25°C unless otherwise specified)

Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
V(BR)DSS	Drain-Source Breakdown Voltage		40	V
VGS	Gate-Source Voltage		±20	V
TJ	Maximum Junction Temperature		175	°C
TSTG	Storage Temperature Range		-55 to 175	°C
IS	Diode Continuous Forward Current	TC =25°C	330	A
Mounted on Large Heat Sink				
EAS	Single Pulse Avalanche Energy (Note1)		1225	mJ
IDM	Pulse Drain Current Tested (Silicon Limit) (Note2)	TC =25°C	1320	A
ID	Continuous Drain current	TC =25°C	330	A
PD	Maximum Power Dissipation	TC =25°C	270	W
RθJc	Thermal Resistance Junction-to-Case (Note3)		0.56	°C/W

ELECTRICAL CHARACTERISTICS(at TJ = 25°C unless otherwise specified)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
V(BR)DSS	Drain- Source Breakdown Voltage	VGS=0V ID=250μA	40	--	--	V
IDSS	Zero Gate Voltage Drain current	VDS=40V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(TH)	Gate Threshold Voltage	VDS=VGS,ID=250μA	1	--	2	V
RDS(ON)	Drain-Source On-State Resistance (Note4)	VGS=10V, ID=75A	--	0.9	1.1	mΩ
		VGS=4.5V, ID=20A	--	1.2	2.5	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated) (Note5)						
Ciss	Input Capacitance	VDS=20V, VGS=0V, F=100kHz	--	7435	--	pF
Coss	Output Capacitance		--	1931	--	pF
Crss	Reverse Transfer Capacitance		--	56	--	pF
Qg	Total Gate Charge	VDS=20V, ID=30A, VGS=10V	--	105	--	nC
Qgs	Gate-Source Charge		--	20	--	nC
Qgd	Gate-Drain Charge		--	13	--	nC
RG	Reverse Transfer Capacitance	F=1MHz	--	3.4	--	Ω
Switching Characteristics (Note5)						
td(on)	Turn-on Delay Time	VDS=20V, ID=50A RG=1.6Ω , VGS=10V	--	28	--	nS
tr	Turn-on Rise Time		--	26	--	nS
td(off)	Turn-off Delay Time		--	244	--	nS
tf	Turn-off Fall Time		--	62	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
VSD	Forward on voltage	IS=10A,VGS=0V	--	--	1.2	V

Notes:

1. Limited by TJ max, starting TJ = 25° C, RG = 25Ω, VD =30V, VGS =10V. Part not recommended for use above this value.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. Surface Mounted on FR4 Board, t ≤ 10 sec.
4. Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
5. Guaranteed by design, not subject to production testing.

CHARACTERISTICS DIAGRAMS

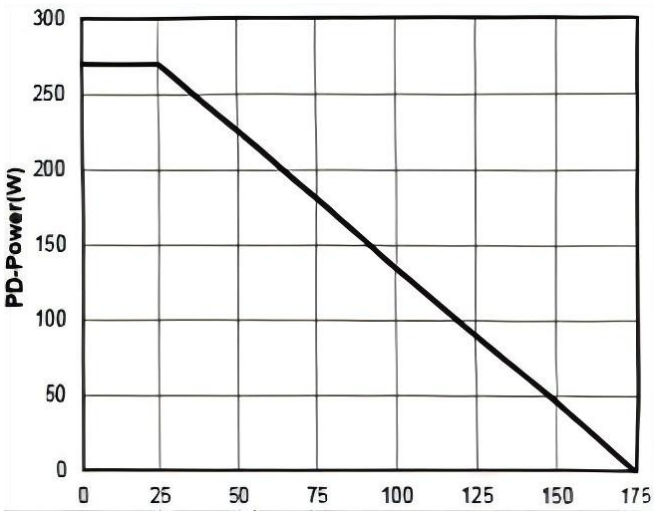


Figure1：TJ- Junction Temperature (°C)

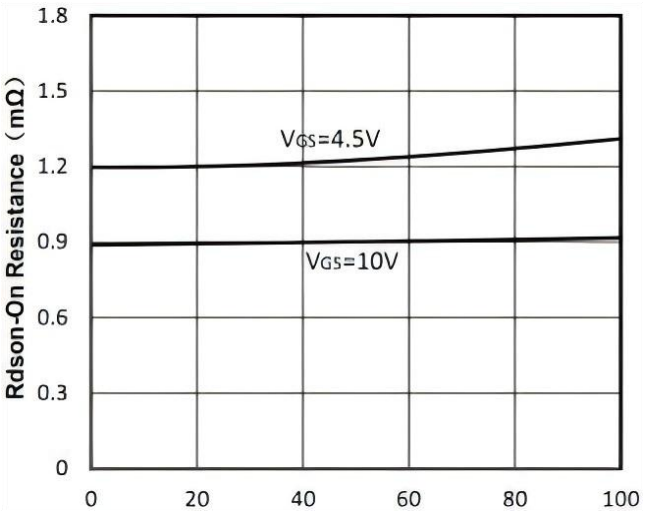


Figure2：ID- Drain Current（A）

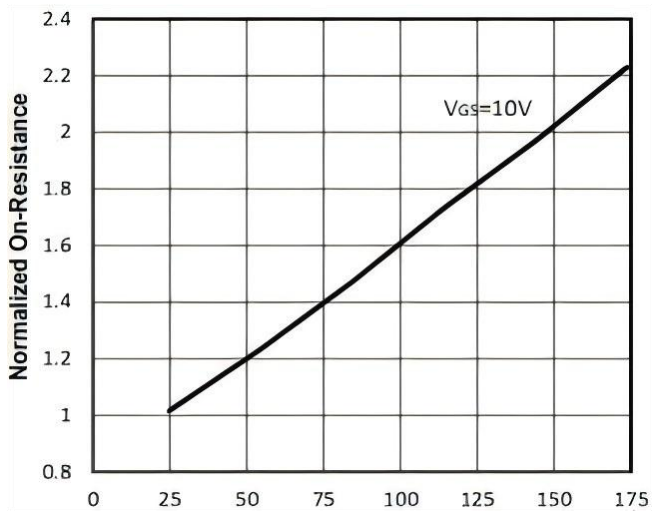


Figure3：TJ- Junction Temperature (°C)

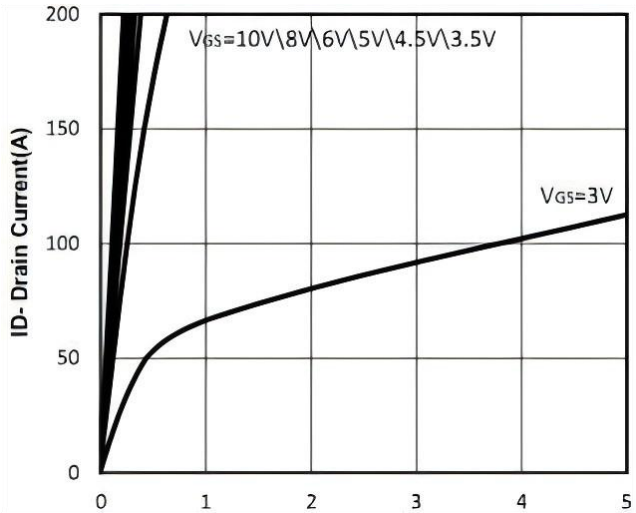


Figure4：VDS- Drain-Source Voltage（V）

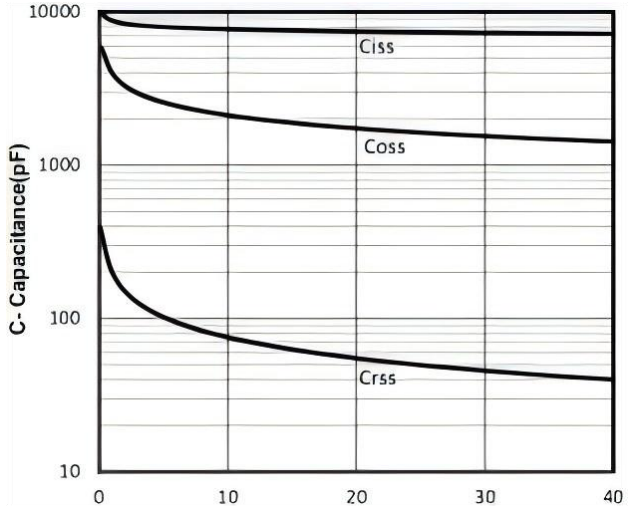


Figure5：VDS- Drain-Source Voltage（V）

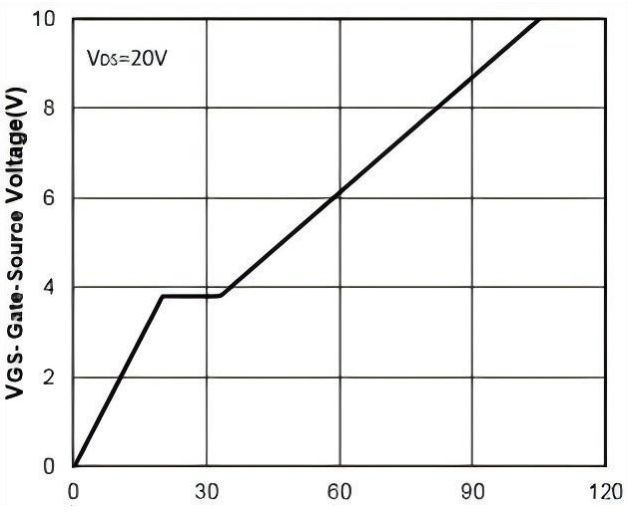


Figure6：Qg- Gate Charge（nC）

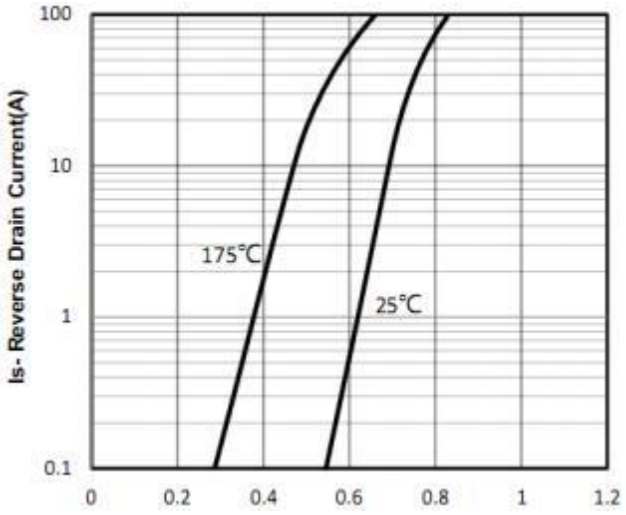


Figure7：Vsd- Source-Drain Voltage（V）

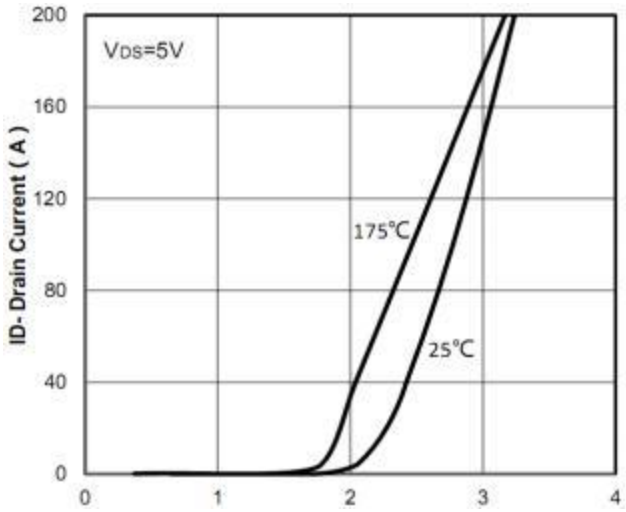


Figure8：VGS- Gate-Source Voltage（V）

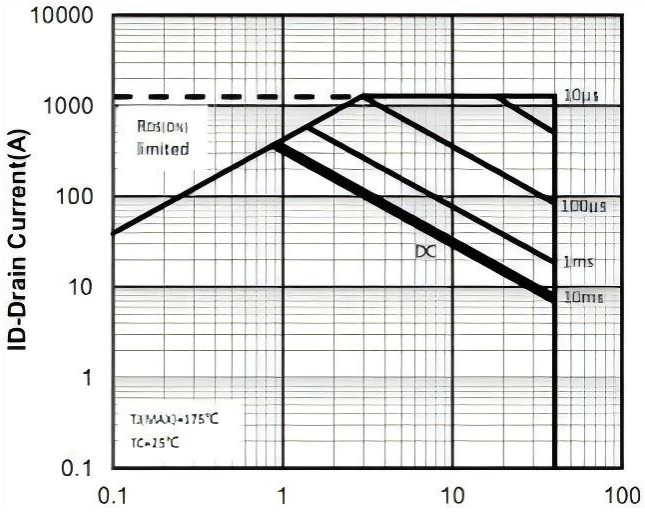


Figure9：VDS- Drain -Source Voltage（V）

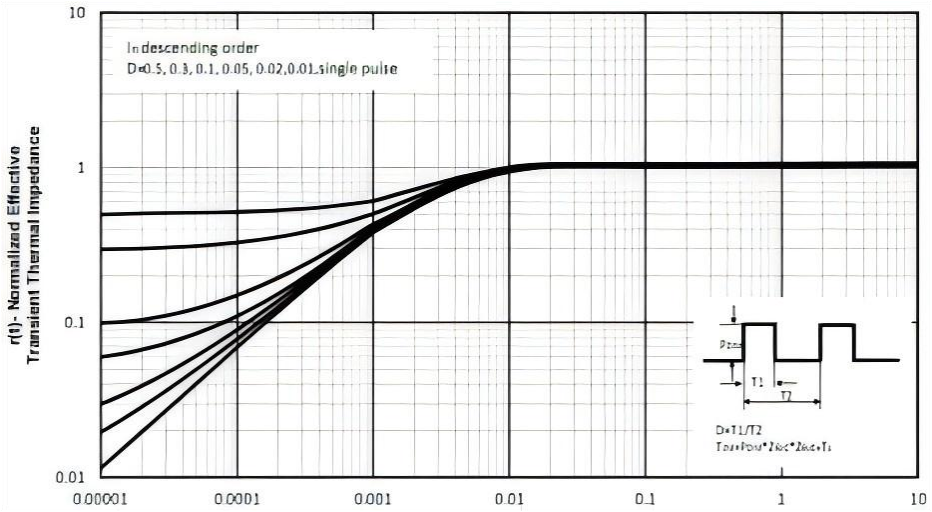
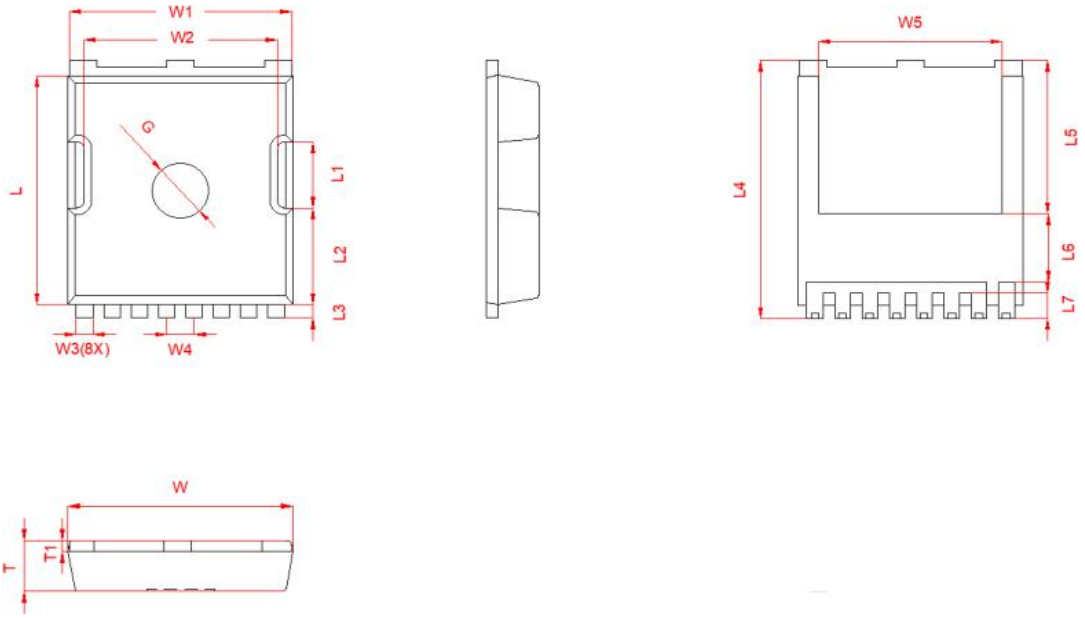


Figure10：Square Wave Pulse Duration（sec）

PACKAGE OUTLINE



Symbol	Size		Symbol	Size		Symbol	Size	
	Min	Max		Min	Max		Min	Max
W	9.7	10.1	L	10.28	10.58	L6	(3.1)	
W1	9.7	9.9	L1	(3.0)		L7	1.1	1.3
W2	(8.5)		L2	4.2	4.6	T	2.2	2.4
W3	0.6	0.85	L3	0.5	0.7	T1	0.4	0.6
W4	1.1	1.3	L4	11.48	11.88	G(Φ)	(2.5)	
W5	(8.1)		L5	(6.9)				

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