100V N-Channel Enhancement Power MOSFET

V_{DSS}	100V
I_D	6A
$R_{DS(ON)_MAX}$ @V_{GS}=10V	140mΩ

DESCRIPTION：

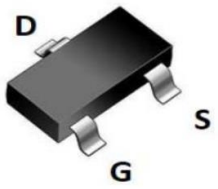
·High density cell design for ultra low Ros(on)

·Fully characterized avalanche voltage and current

TYPICAL APPLICATIONS：

·Power switching application

·Uninterruptible power supply



SOT-23

MAXIMUM RATINGS (at T_C = 25 °C, unless otherwise specified)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	6	A
Drain Current-Pulsed	I_{DM}	20	A
Maximum Power Dissipation	P_D	1.2	W
Junction Temperature	T_J	150	℃
Junction & Storage temperature Range	T_{STG}	-55~+150	℃

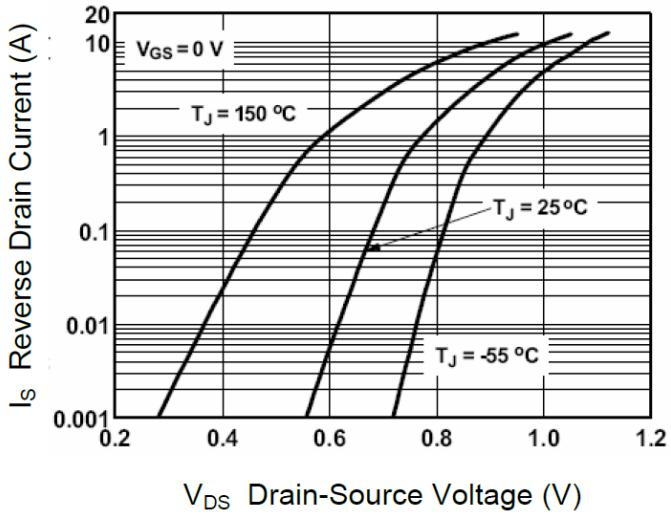
THERMAL CHARACTERISTICS

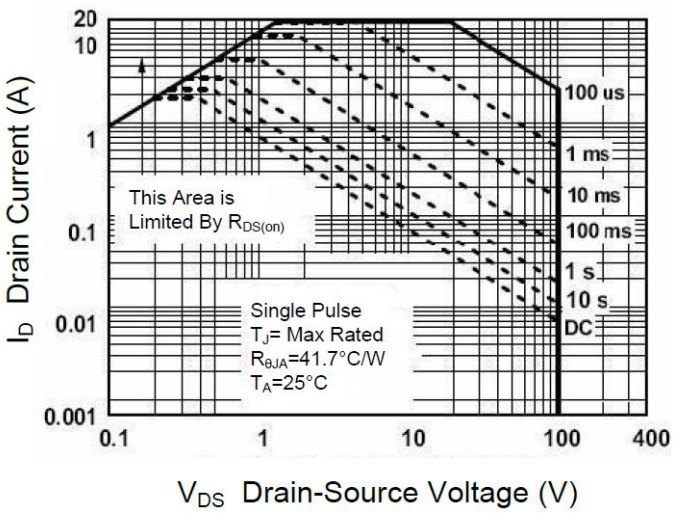
Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient	$R_{\theta JA}$	104	℃/W

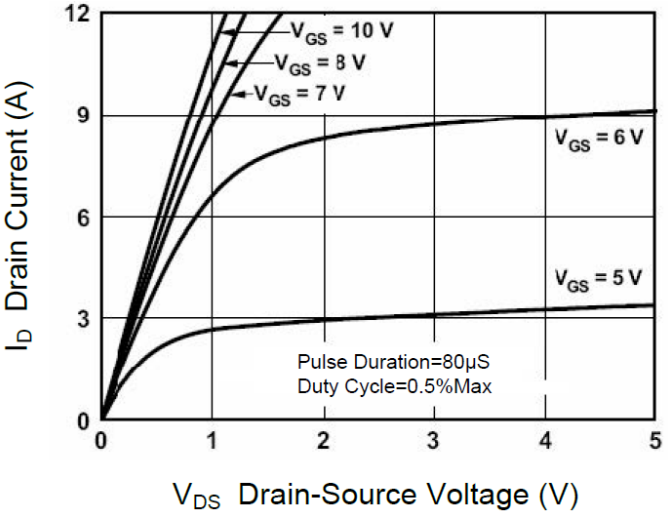
ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

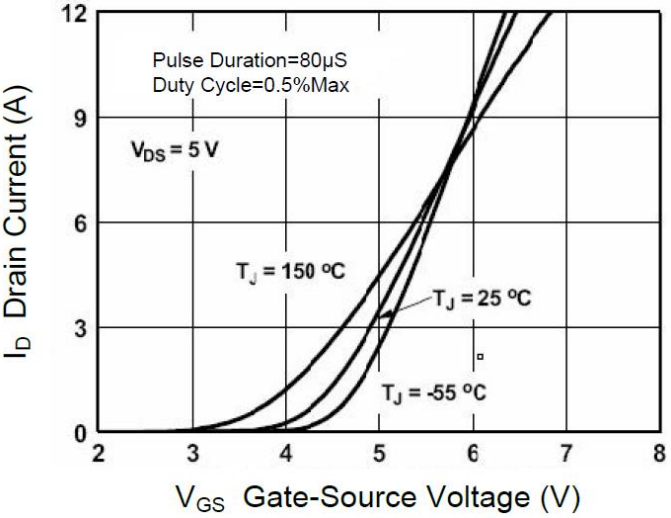
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	$V_{(BR)DSS}$	100			V
Zero Gate Voltage Drain Current VDS =100 V, VGS = 0 V	I_{DSS}			1	uA
Gate-Source Leakage Current VGS = ±20V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	1.2		2.5	V
Drain-Source On-State Resistance VGS = 10V, ID = 5A	$R_{DS(on)}$		105	140	mΩ
Forward Transconductance VDS = 5V, ID =2.9A	g_{FS}		8		S
Input capacitance f=1MHz, VDS=25 V, VGS=0 V	C_{iss}		690		pF
Output capacitance f=1MHz, VDS=25 V, VGS=0 V	C_{oss}		120		pF
Reverse transfer capacitance f=1MHz, VDS=25 V, VGS=0 V	C_{rss}		90		pF
Turn-on delay time VDS= 30V, VGS= 10V, ID= 2A, R_{GEN}=2.5Ω, R_L=15Ω	$td_{(ON)}$		11		ns
Rise time VDS= 30V, VGS= 10V, ID= 2A, R_{GEN}=2.5Ω, R_L=15Ω	tr		7.4		ns
Turn-off delay time VDS= 30V, VGS= 10V, ID= 2A, R_{GEN}=2.5Ω, R_L=15Ω	$td_{(OFF)}$		35		ns
Fall time VDS= 30V, VGS= 10V, ID= 2A, R_{GEN}=2.5Ω, R_L=15Ω	tf		9.1		ns
Total Gate Charge VDS= 30V, ID= 3A, VGS= 10V	Q_G		15.5		nC
Gate to Source Charge VDS= 30V, ID= 3A, VGS= 10V	Q_{GS}		3.2		nC
Gate to Drain Charge VDS= 30V, ID= 3A, VGS= 10V	Q_{GD}		4.7		nC
Maximum Pulsed Body Diode Forward Current	IS			6	A
Diode Forward Voltage VGS = 0V, I_S = 6A	V_{SD}			1.2	V

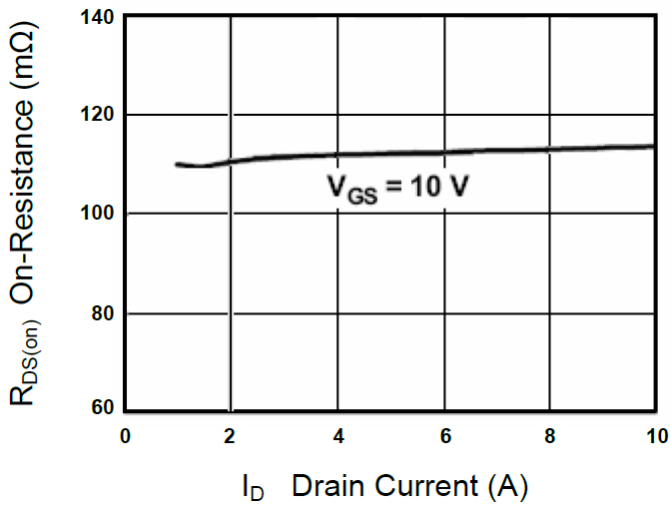
Typical Performance Characteristics

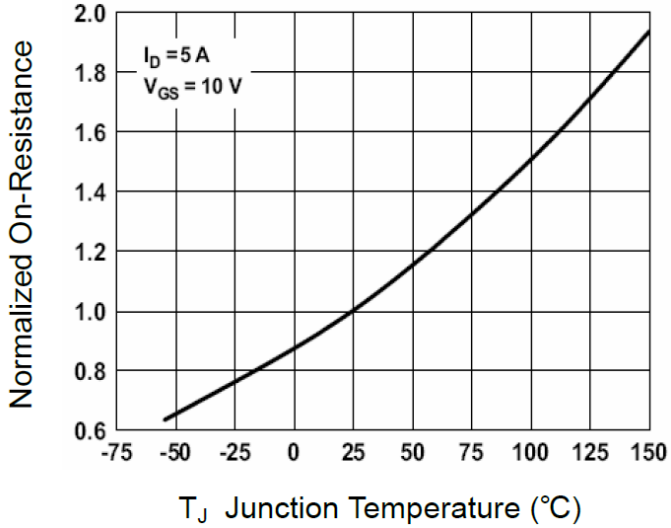


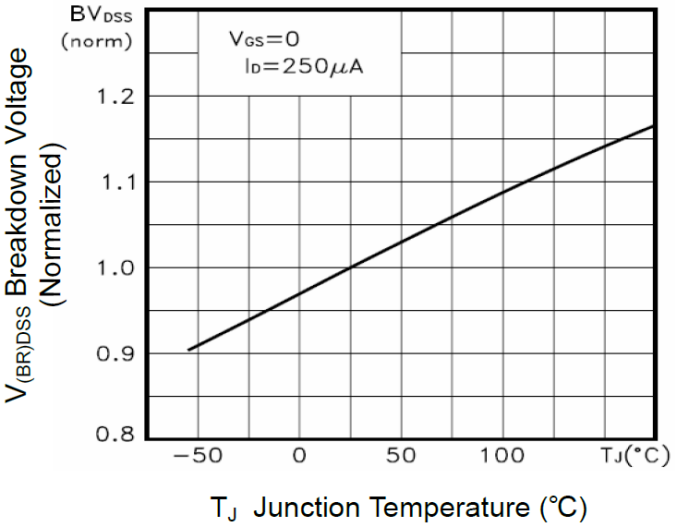


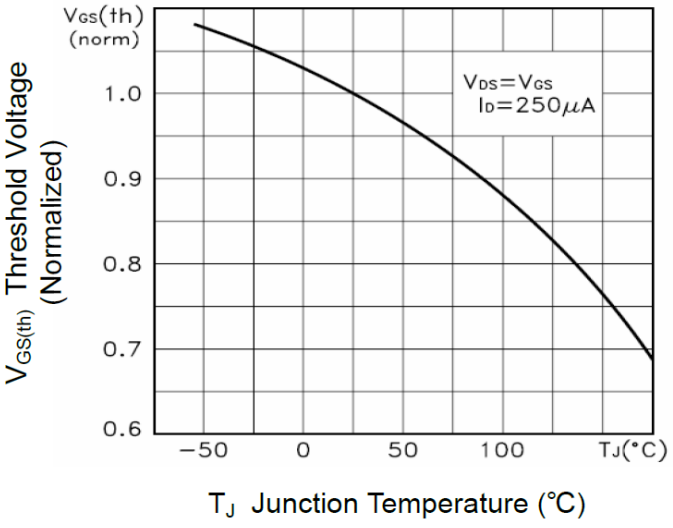


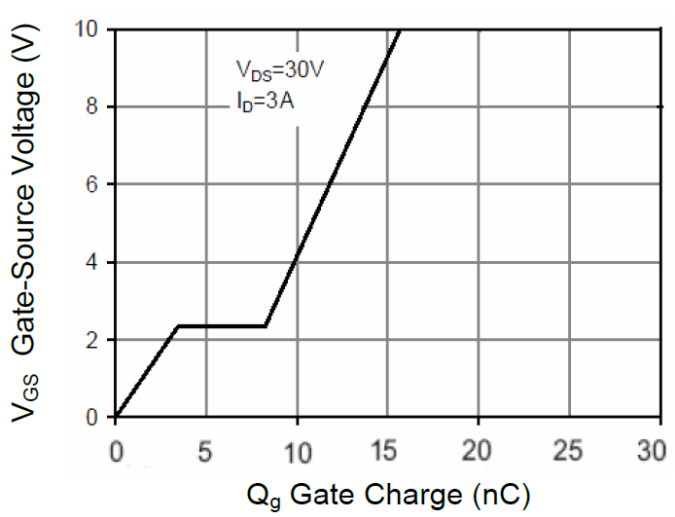


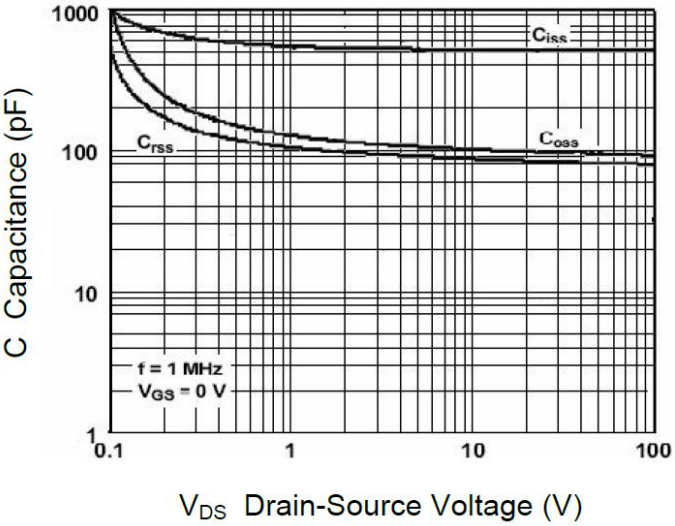


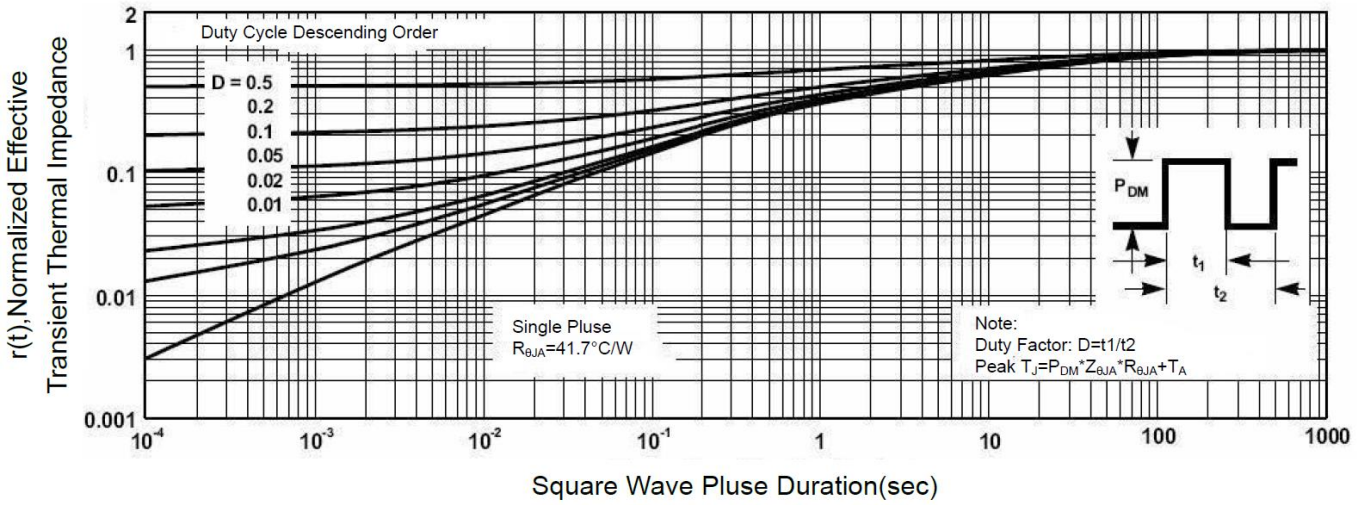



BVDSS
(norm)
VGS=0
ID=250μA
1.2
1.1
1.0
0.9
0.8
−50
0
50
100
TJ(°C)
V(BR)DSS Breakdown Voltage
(Normalized)
TJ Junction Temperature (°C)

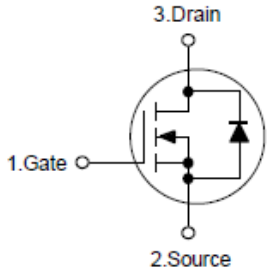

VGS(th)
(norm)
VDS=VGS
ID=250μA
1.0
0.9
0.8
0.7
0.6
−50
0
50
100
TJ(°C)
VGS(th) Threshold Voltage
(Normalized)
TJ Junction Temperature (°C)


VDS=30V
ID=3A
10
8
6
4
2
0
0
5
10
15
20
25
30
VGS Gate-Source Voltage (V)
Qg Gate Charge (nC)

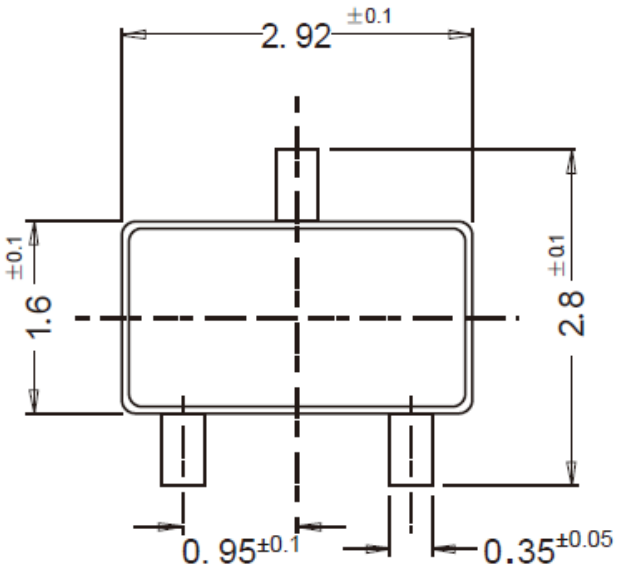

1000
100
10
1
0.1
1
10
100
Ciss
Crss
Coss
f = 1 MHz
VGS = 0 V
C Capacitance (pF)
VDS Drain-Source Voltage (V)

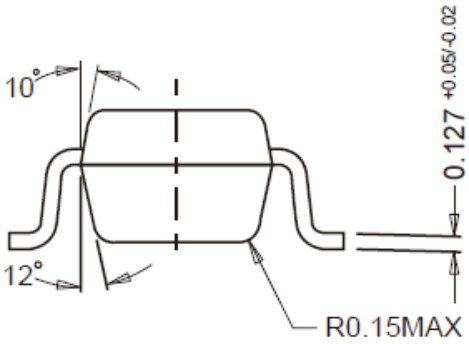

Duty Cycle Descending Order
D = 0.5
0.2
0.1
0.05
0.02
0.01
Single Pluse
RθJA=41.7°C/W
PDM
t1
t2
Note:
Duty Factor: D=t1/t2
Peak TJ=PDM*ZθJA*RθJA+TA
2
1
0.1
0.01
0.001
10-4
10-3
10-2
10-1
1
10
100
1000
r(t),Normalized Effective
Transient Thermal Impedance
Square Wave Pluse Duration(sec)

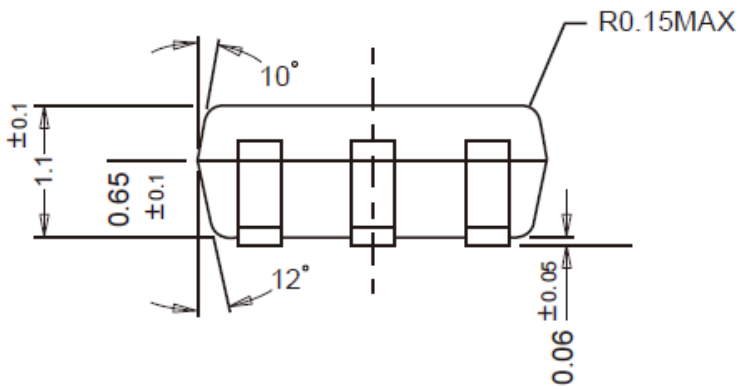
·Circuit diagram



·Package outlines : Dimensions in (mm)







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