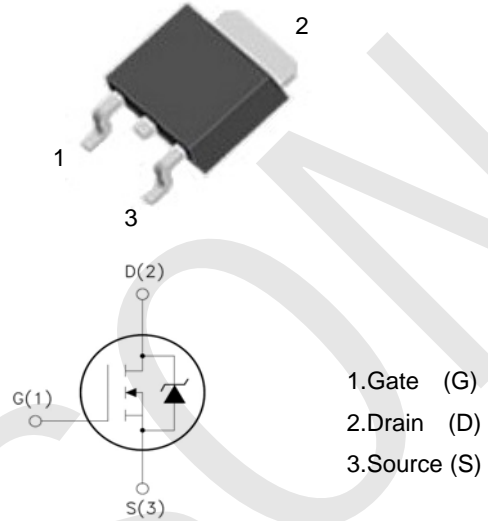


SM70N10

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Qg=60nC (Typ.).
- BVDSS=100V,I_D=70A
- R_{DS(on)} : 0.012Ω (Max) @V_G=10V
- 100% Avalanche Tested

TO-252



Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	100	V
I _D	Drain Current	T _j =25°C	70
		T _j =100°C	49
V _{GS(TH)}	Gate Threshold Voltage	±30	V
E _{AS}	Single Pulse Avalanche Energy (note1)	225	mJ
I _{AR}	Avalanche Current (note2)	50	A
P _D	Power Dissipation (T _j =25°C)	80	W
T _j	Junction Temperature(Max)	150	°C
T _{stg}	Storage Temperature	-55~+150	°C
TL	Maximum lead temperature for soldering purpose, 1/8" from case for 5 seconds	300	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJC}	Thermal Resistance, Junction to Case	-	1.875	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	-	62.5	°C/W

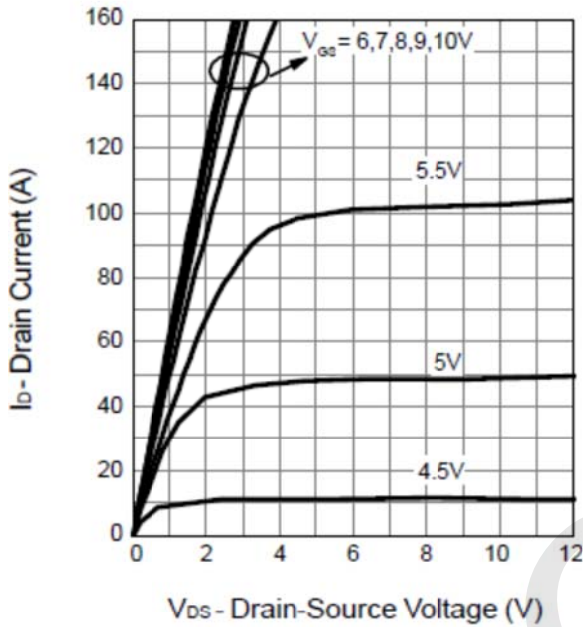
Electrical Characteristics (Ta=25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0	100	-	-	V
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temperature Coefficient	I _D =250μA, Reference to 25°C	-	0.25	-	V/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V	-	-	10	μA
		V _{DS} =48V, T _J =125°C	-	-	100	
I _{GSSF}	Gate-body leakage Current, Forward	V _{GS} =+30V, V _{DS} =0V	-	-	100	nA
I _{GSSR}	Gate-body leakage Current, Reverse	V _{GS} =-30V, V _{DS} =0V	-	-	-100	
On Characteristics						
V _{GS(TH)}	Date Threshold Voltage	I _D =250μA, V _{DS} =V _{GS}	2	-	4	V
R _{DS(ON)}	Static Drain-Source On-Resistance	I _D =35A, V _{GS} =10V	-	-	0.012	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0, f=1.0MHz	-	3250	-	pF
C _{oss}	Output Capacitance		-	339	-	
C _{rss}	Reverse Transfer Capacitance		-	179	-	
Switching Characteristics						
T _{d(on)}	Turn-On Delay Time	V _{DD} =50V, I _D =35A R _G =6.8Ω (Note 3,4)	-	15	-	ns
T _r	Turn-On Rise Time		-	108	-	
T _{d(off)}	Turn-Off Delay Time		-	51	-	
T _f	Turn-Off Rise Time		-	59	-	
Q _g	Total Gate Charge	V _{DS} =30, V _{GS} =10V, I _D =35A (Note 3,4)	-	60	-	nC
Q _{gs}	Gate-Source Charge		-	13.7	-	
Q _{gd}	Gate-Drain Charge		-	22.8	-	
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Max. Diode Forward Current	-	-	-	70	A
I _{SM}	Max. Pulsed Forward Current	-	-	-	280	
V _{SD}	Diode Forward Voltage	I _D =44A	-	-	1.2	V
T _{rr}	Reverse Recovery Time	I _S =44A, V _{GS} =0V diF/ dt=100A/μs (Note3)	-	35	53	nS
Q _{rr}	Reverse Recovery Charge		-	143	215	μC

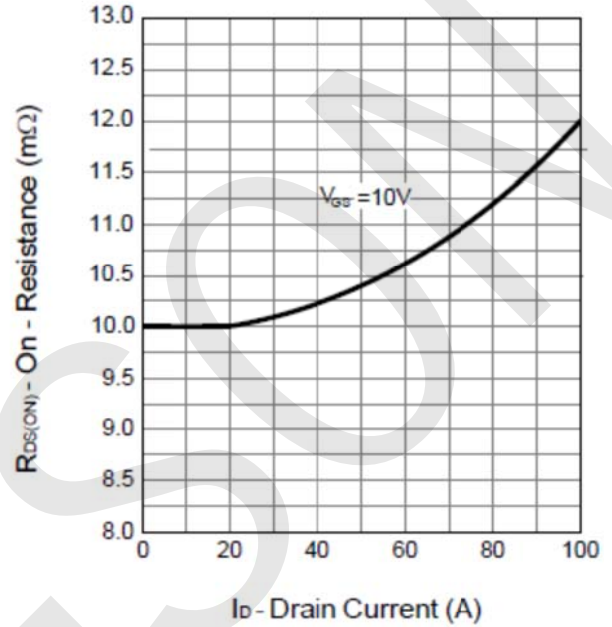
- Notes : 1, L=0.5mH, I_{AS}=70A, V_{DD}=50V, R_G=25Ω, Starting T_J =25°C
 2, Repetitive Rating : Pulse width limited by maximum junction temperature
 3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
 4, Essentially Independent of Operating Temperature

Typical Operating Characteristics

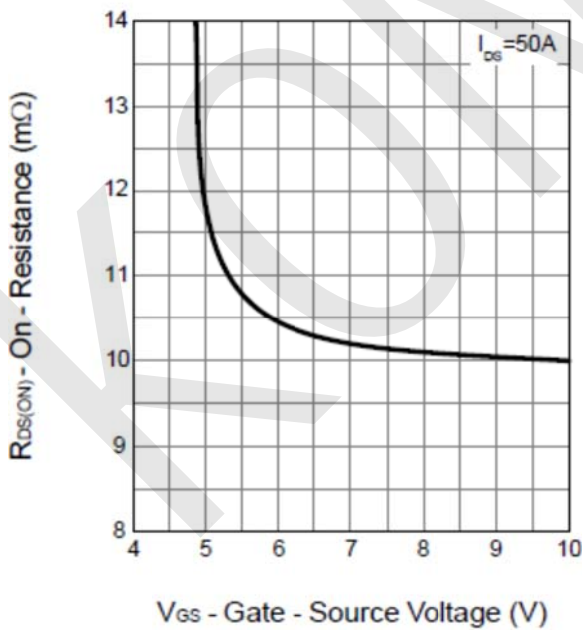
Output Characteristics



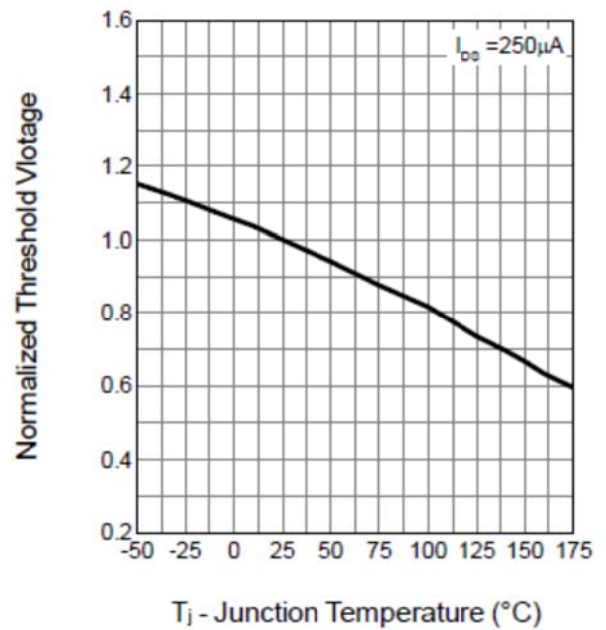
Drain-Source On Resistance



Drain-Source On Resistance

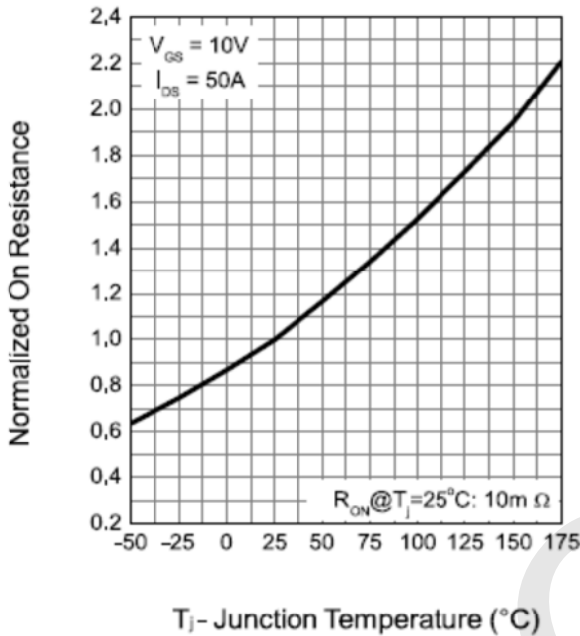


Gate Threshold Voltage

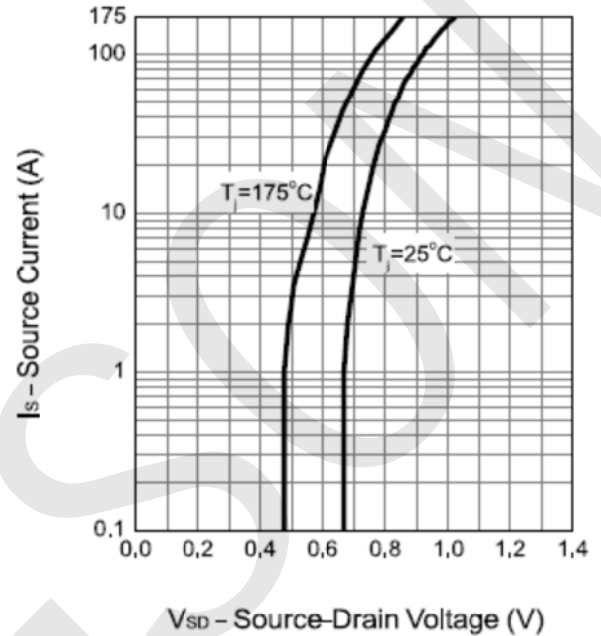


Typical Operating Characteristics

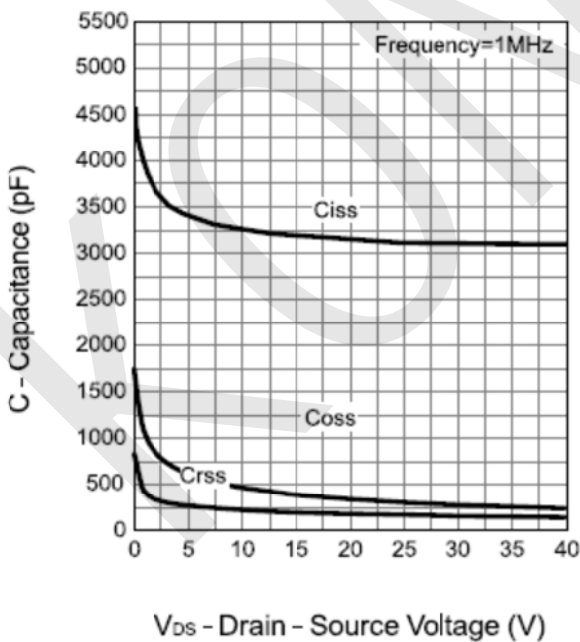
Drain-Source On Resistance



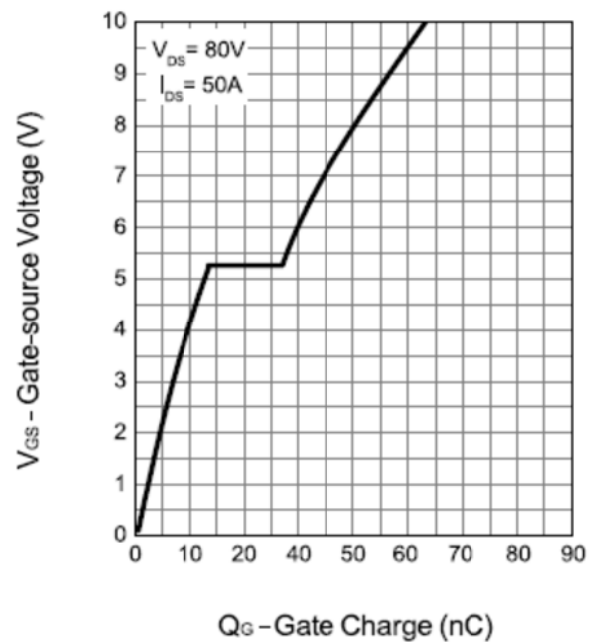
Source-Drain Diode Forward



Capacitance

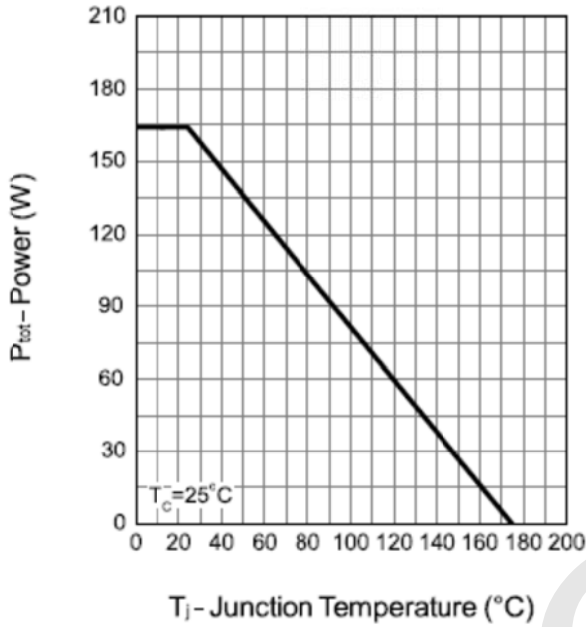


Gate Charge

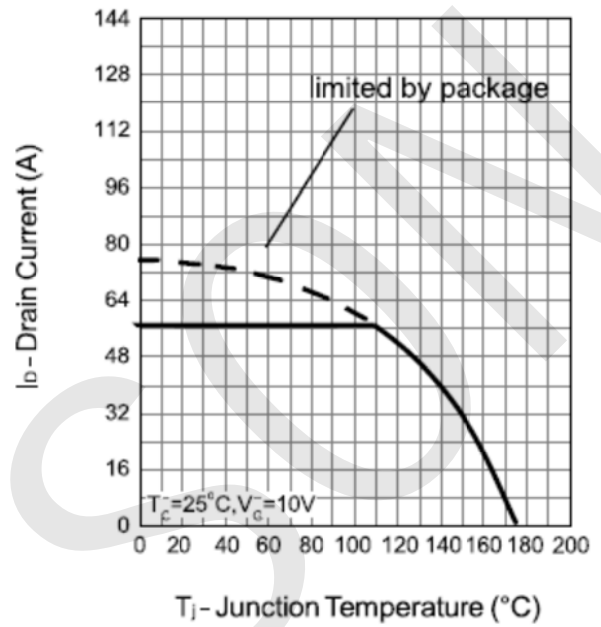


Typical Operating Characteristics

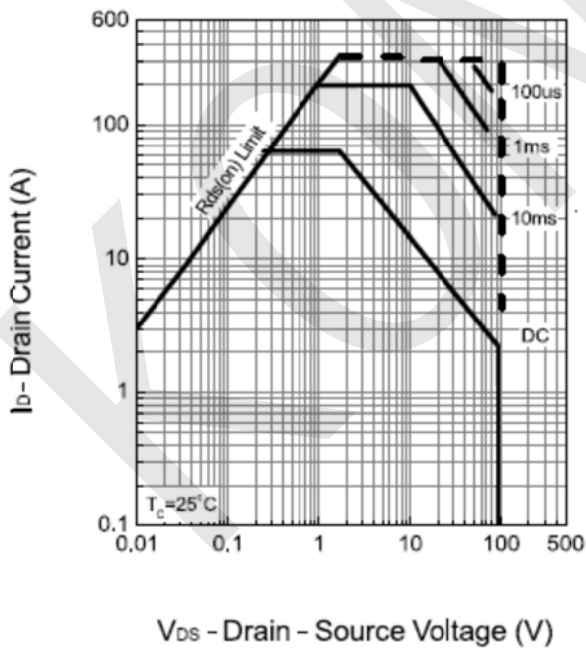
Power Dissipation



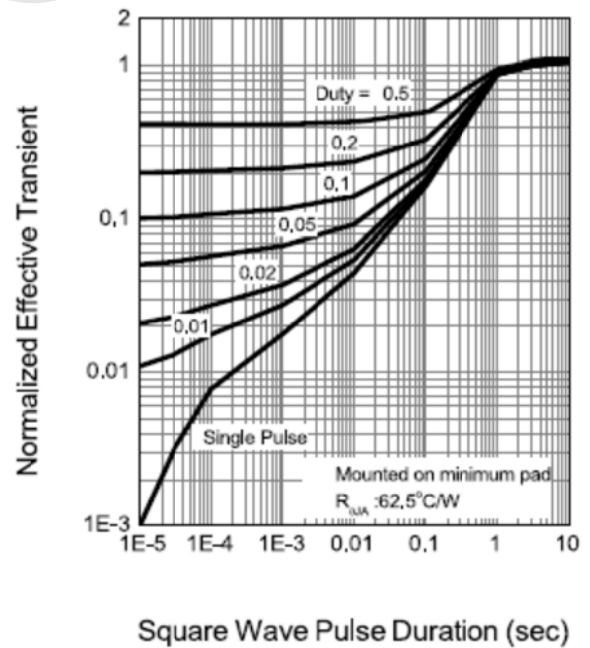
Drain Current



Safe Operation Area



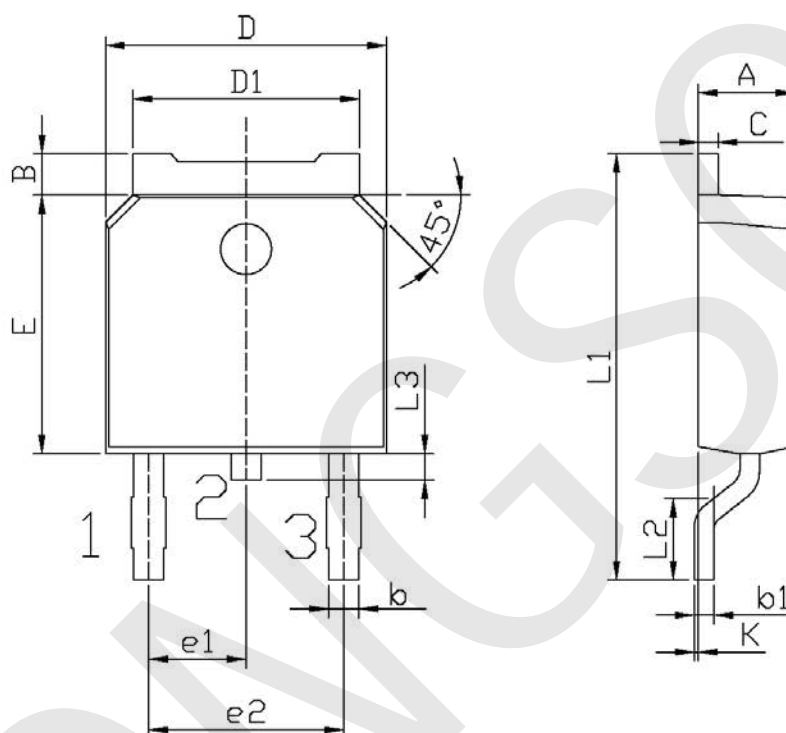
Thermal Transient Impedance



Package Dimension

TO-252

Unit:mm



单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.20	5.40	K	0.00	0.10