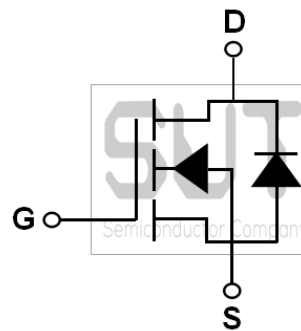
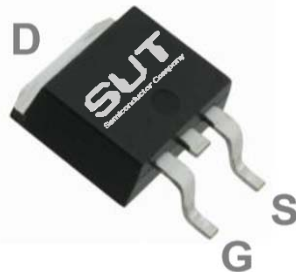


N-Channel 30-V_(D-S) MOSFET

PRODUCT SUMMARY		
B _{VDSS} (V)	R _{DS(on)} (mΩ)(MAX)	I _D (A)
30	6.0@V _{GS} =10V	60

TO252 Pin Configuration



ABSOLUTE MAXIMUM RATINGS(T_C=25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous (T _C =25°C)	I _D	60	A
Drain Current-Continuous (T _C =100°C)		38	A
Drain Current-Pulsed ¹	I _{DM}	240	A
Single Pulse Avalanche Energy ²	EAS	88	mJ
Single Pulse Avalanche Current ²	IAS	42	A
Power Dissipation (T _C =25°C)	P _D	45	W
Power Dissipation-Derate above 25°C		0.36	W/°C
Storage Temperature Range	T _{STG}	-55 to 150	°C
Operating Junction Temperature Range	T _J	-55 to 150	°C

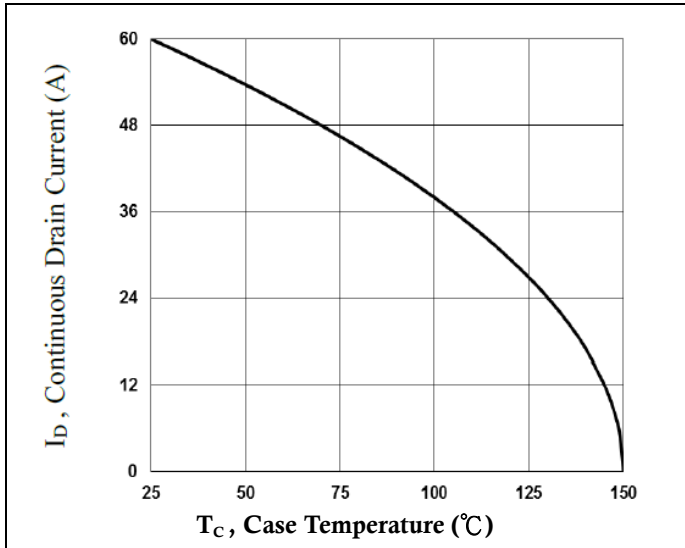
THERMAL CHARACTERISTICS

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to ambient	R _{θJA}	---	62	°C/W
Thermal Resistance Junction to Case	R _{θJC}	---	2.8	°C/W

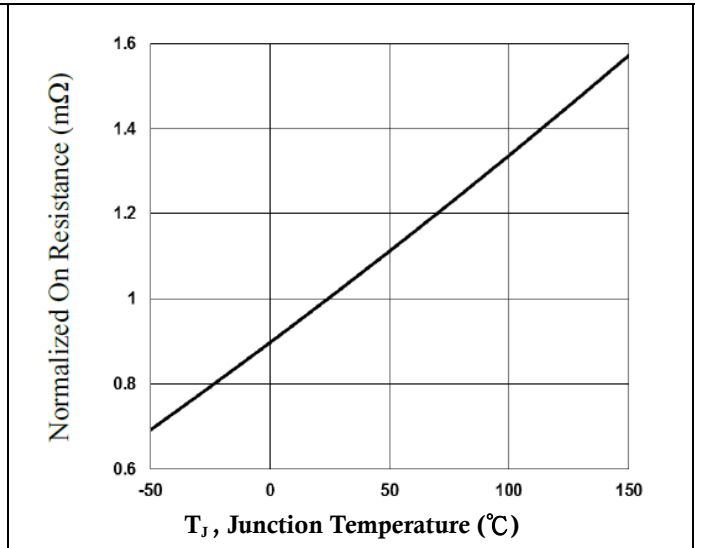
ELECTRICAL CHARACTERISTICS (T _J =25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static State Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30	---	---	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA	---	0.04	---	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{GS} =0V, V _{DS} =30V, T _J =25°C	---	---	1	μA
		V _{GS} =0V, V _{DS} =24V, T _J =125°C	---	---	10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
Static Drain-Source On-Resistance ³	R _{DS(ON)}	V _{GS} =10V, I _D =20A	---	4.8	6.0	mΩ
		V _{GS} =4.5V, I _D =10A	---	6.7	9.0	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250μA	1.2	1.6	2.5	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		---	-4.0	---	mV/°C
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =10A	---	23	---	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3, 4}	Q _g	V _{GS} =4.5V, V _{DS} =15V, I _D =20A	---	11.1	18	nC
Gate-Source Charge ^{3, 4}	Q _{gs}		---	1.85	3.8	
Gate-Drain Charge ^{3, 4}	Q _{gd}		---	6.8	12	
Turn-On Delay Time ^{3, 4}	T _{d(on)}	V _{GS} =10V, V _{DD} =15V, R _G =3.3Ω, I _D =15A	---	7.5	14	ns
Rise Time ^{3, 4}	T _r		---	14.5	28	
Turn-Off Delay Time ^{3, 4}	T _{d(off)}		---	35.2	67	
Fall Time ^{3, 4}	T _f		---	9.6	18	
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, F=1MHz	---	1210	1800	pF
Output Capacitance	C _{oss}		---	190	280	
Reverse Transfer Capacitance	C _{rss}		---	100	150	
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, F=1MHz	---	2.5	5.0	Ω
Guaranteed Avalanche Energy						
Single Pulse Avalanche Energy	EAS	V _{DD} =25V, L=0.1mH, I _{AS} =20A	20	---	---	mJ
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	---	---	60	A
Pulsed Source Current ³	I _{SM}		---	---	240	A
Diode Forward Voltage ³	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1.0	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _S =1A, di/dt=100A/μs, T _J =25°C	---	---	---	ns
Reverse Recovery Charge	Q _{rr}		---	---	---	nC

Note :

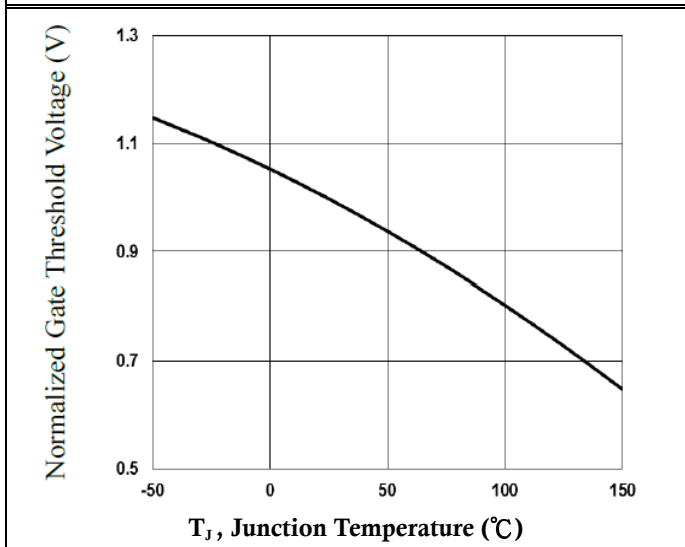
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{GS}=10V, V_{DD}=25V, L=0.1mH, I_{AS}=42A, R_G=25Ω, Starting T_J=25°C.
3. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.



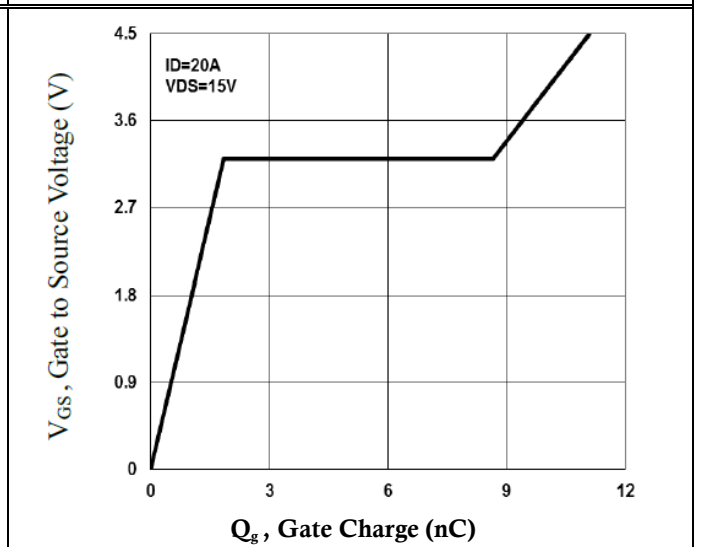
Continuous Drain Current vs. T_C



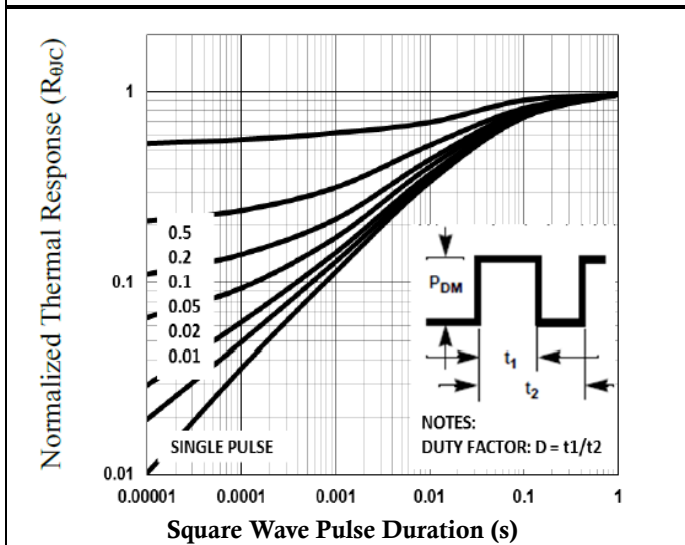
Normalized $R_{DS(ON)}$ vs. T_J



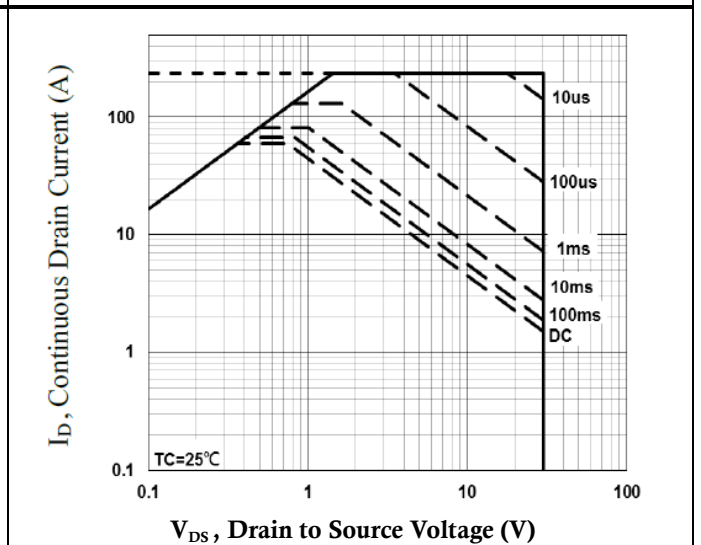
Normalized V_{th} vs. T_J



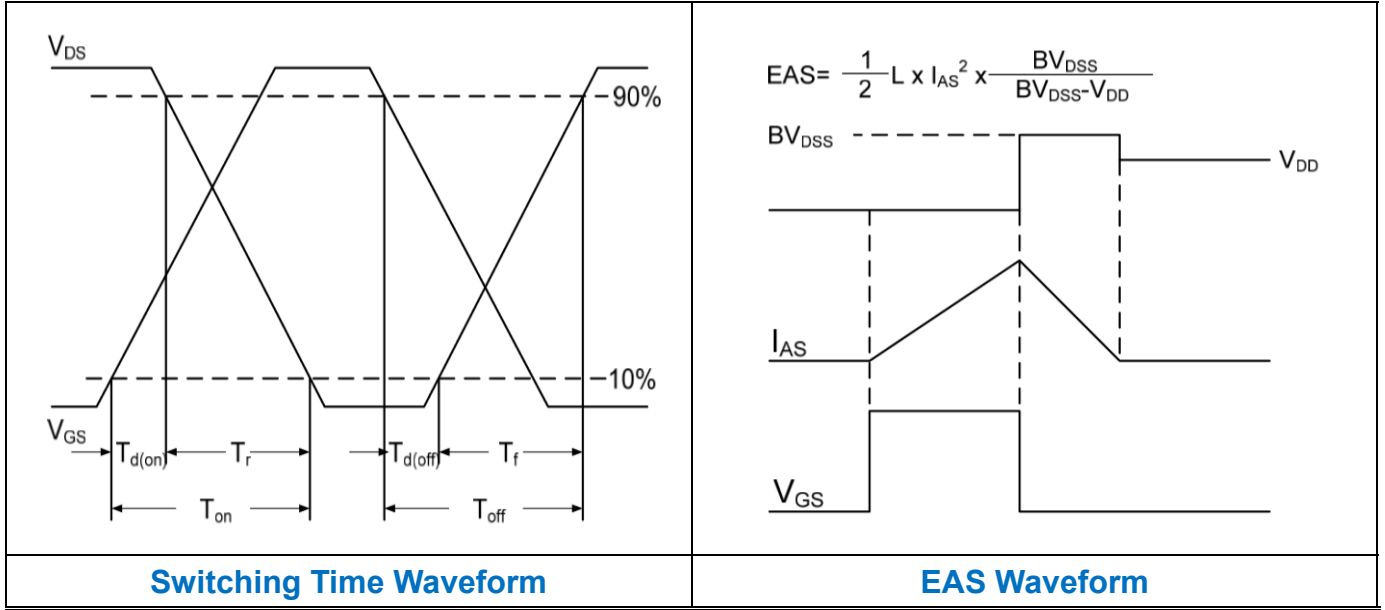
Gate Charge Waveform



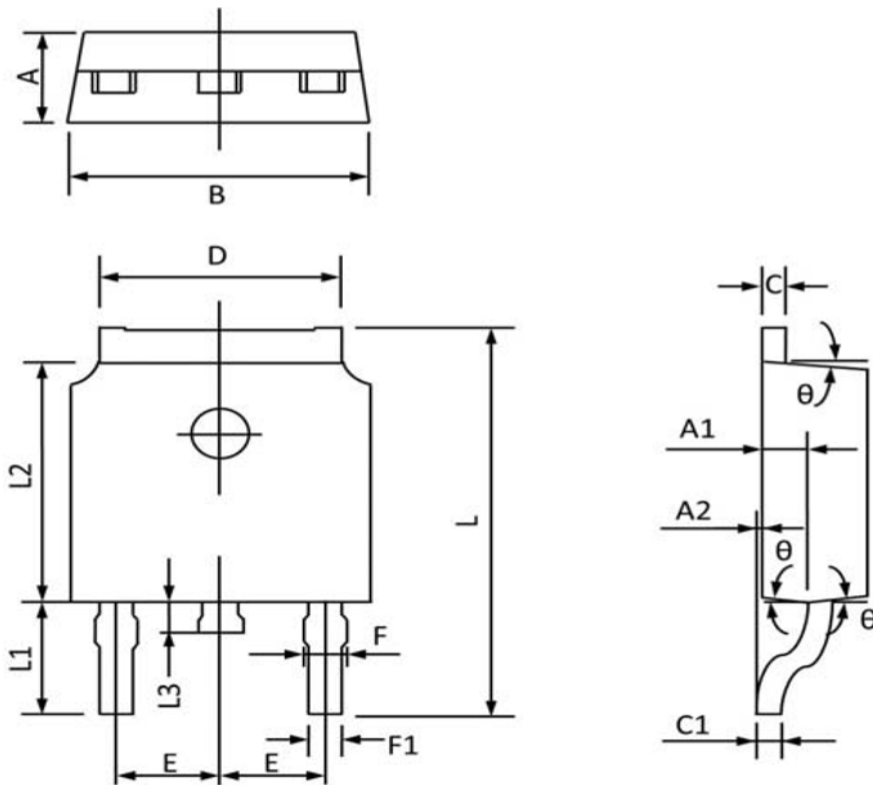
Normalized Transient Impedance



Maximum Safe Operation Area



TO252 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2.400	2.200	0.094	0.087
A1	1.110	0.910	0.044	0.036
A2	0.150	0.000	0.006	0.000
B	6.800	6.400	0.268	0.252
C	0.580	0.450	0.023	0.018
C1	0.580	0.460	0.023	0.018
D	5.500	5.100	0.217	0.201
E	2.386	2.186	0.094	0.086
F	0.940	0.600	0.037	0.024
F1	0.860	0.500	0.034	0.020
L	10.400	9.400	0.409	0.370
L1	3.000	2.400	0.118	0.094
L2	6.200	5.400	0.244	0.213
L3	1.200	0.600	0.047	0.024
θ	9°	3°	9°	3°