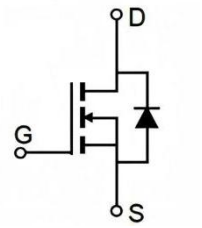
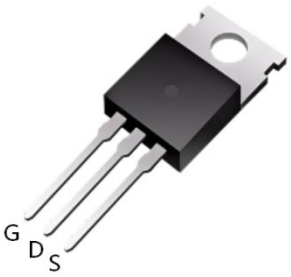
N-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	100	V
$R_{DS(on)}$	2.7	mΩ
I_D	190	A





TO-220

Features

- Advanced SGT MOS technology
- Low Thermal Resistance
- Low Gate Charge
- Fast Switching Speed

Applications

- Motor/Body Load Control
- Load Switch
- PWM Application
- DC-DC converters and Off-line

Absolute Maximum Ratings (Ta=25℃,unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25℃	I_D	190	A
	T_C=100℃		134	
Peak Drain Current, Pulsed [1])		I_{DM}	531	A
Avalanche Current		I_{AS}	70	A
Single Pulse Avalanche Energy [2])		E_{AS}	245	mJ
Power Dissipation	T_C=25℃	P_{tot}	250	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.6	℃/W
Thermal Resistance from Junction to Ambient [3])	$R_{\theta JA}$	55	℃/W

Note:

1) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%, Repetitive rating, pulse width limited by TJ(MAX) = 150°C.

2) Limited by TJ(MAX) , starting TJ = 25°C, L = 0.1mH, V_{GS}=10V,V_{DD}=50V.

3) Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

Electrical Characteristics(T_J=25℃,unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	100	--	--	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V	--	--	1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=50A	--	2.7	3.4	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS},I_D=250μA	2.0	3.0	4.0	V
Dynamic Parameters						
Gate resistance	R_g	V_{DS}=0V, f=1MHz	--	2.5	--	Ω
Forward Transconductance	g_{fs}	V_{DS}=5V, I_D=20A	--	85	--	S
Input Capacitance	C_{iss}	V_{GS}=0V,V_{DS}=50V, f=1MHz	--	7470	--	pF
Output Capacitance	C_{oss}		--	930	--	
Reverse Transfer Capacitance	C_{rss}		--	50	--	
Total gate charge	Q_g	V_{DS}=50V,V_{GS}=10V, I_D=20A	--	66	--	nC
Gate-source charge	Q_{gs}		--	15.2	--	
Gate-drain charge	Q_{gd}		--	15.2	--	
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V,V_{DD}=50V, R_G=6Ω, R_L=2.5Ω	--	17.2	--	nS
Rise time	t_r		--	37	--	
Turn-Off Delay Time	$t_{d(off)}$		--	68	--	
Fall time	t_f		--	61	--	

Diode Characteristics

Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=50A	--	0.9	1.2	V
Reverse Recovery Time	t_{rr}	dIF/dt=100A/μs, I_S=20A	--	94	--	ns
Reverse Recovery Charge	Q_{rr}		--	242	--	nC

Typical Characteristics

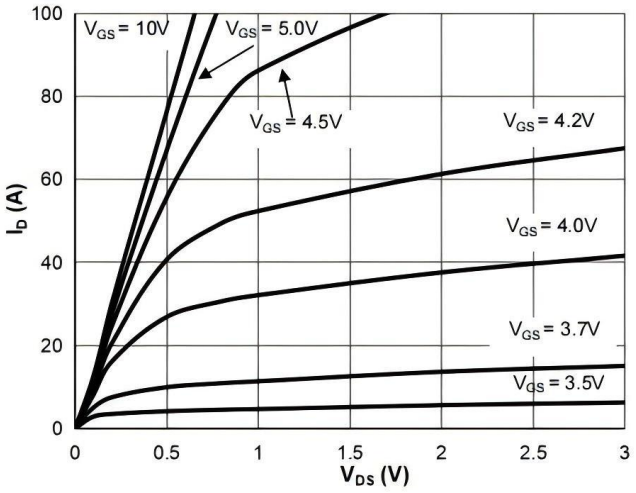


Figure 1: Saturation Characteristics

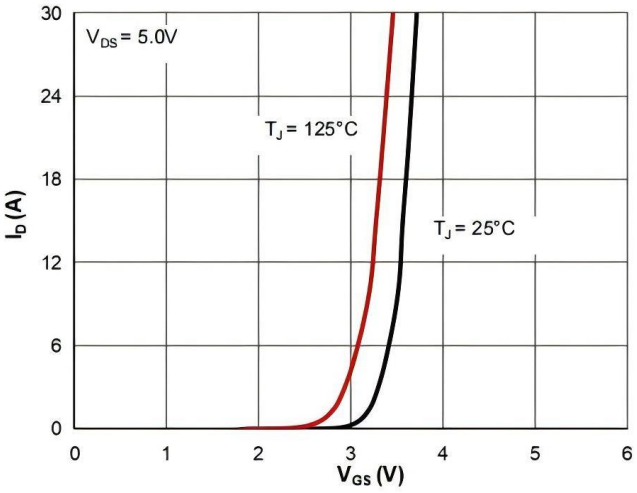


Figure 2: Transfer Characteristics

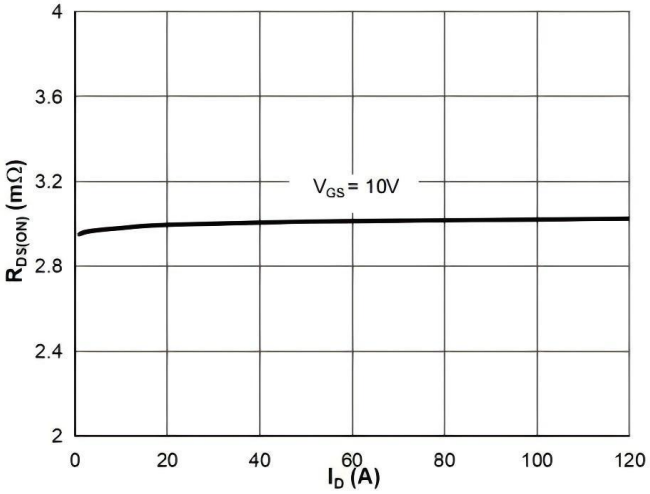


Figure 3: $R_{DS(ON)}$ vs. Drain Current

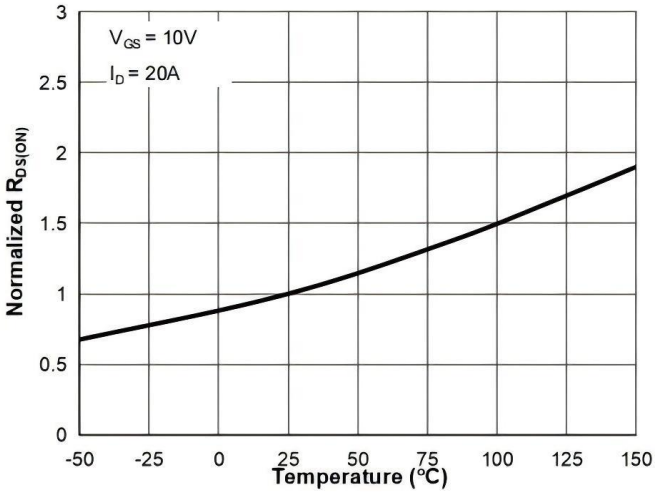


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

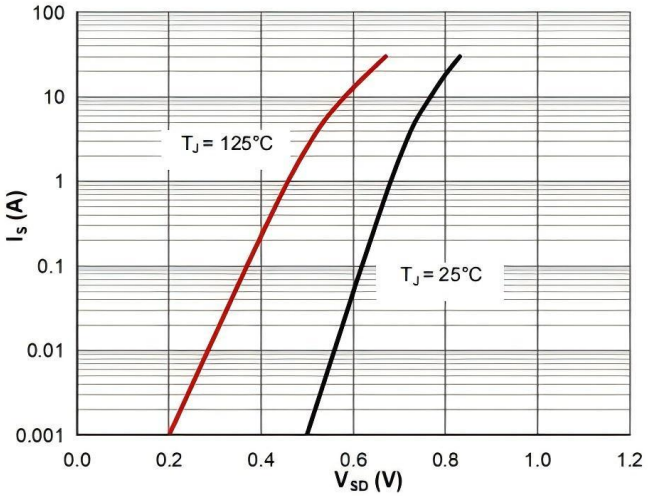


Figure 5: Body-Diode Characteristics

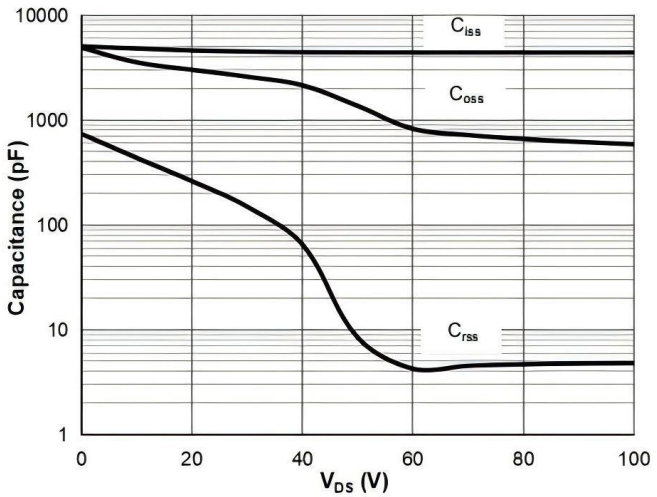


Figure 6: Capacitance Characteristics

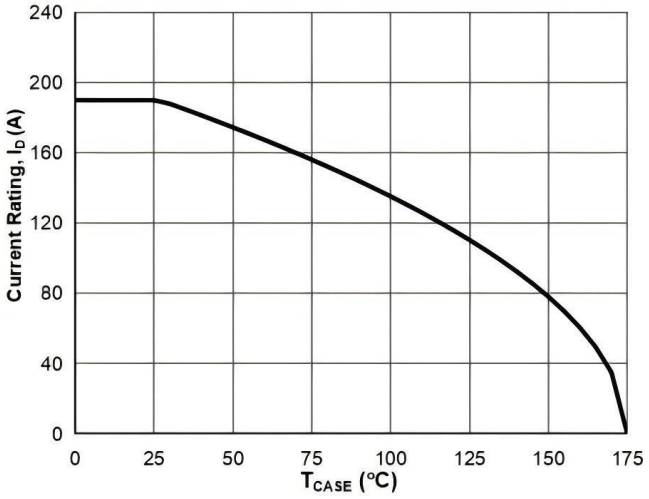


Figure 7: Current De-rating

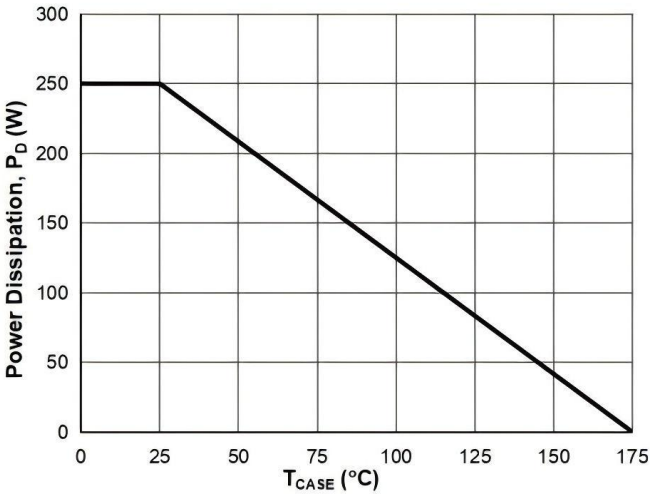


Figure 8: Power De-rating

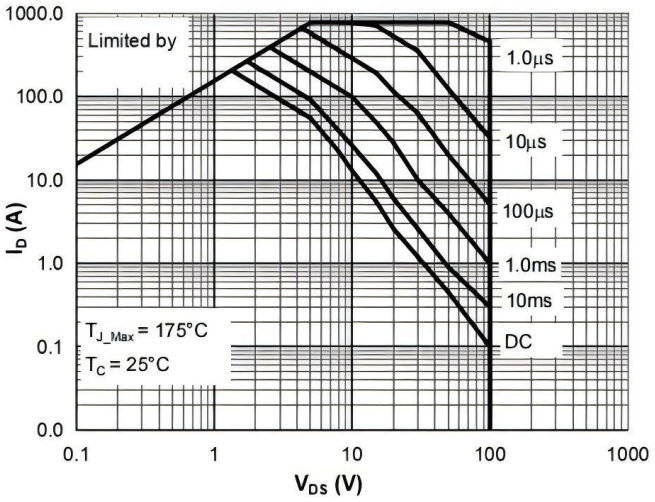


Figure 9: Maximum Safe Operating

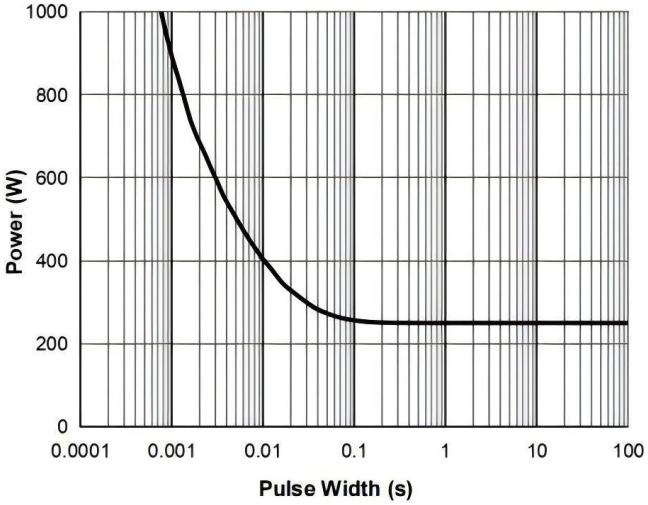


Figure 10: Single Pulse Power Rating, Junction-to-Case

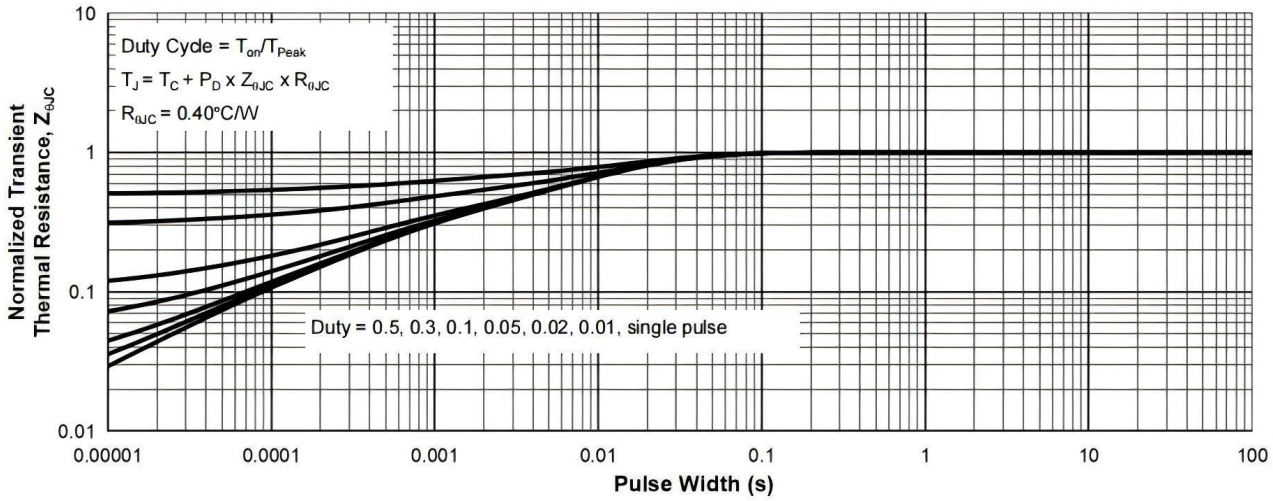
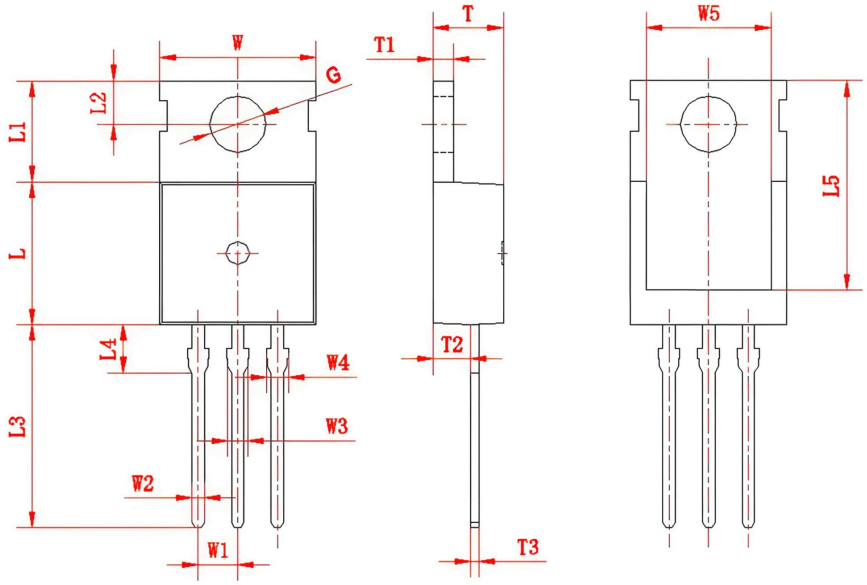


Figure 11: Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions (Units: mm)

TO-220



Symbol	Min	Max	Symbol	Min	Max	Symbol	Min	Max
W	9.80	10.20	L	9.00	9.40	T	4.30	4.70
W1	(2.54)		L1	6.30	6.70	T1	1.20	1.40
W2	0.70	0.90	L2	2.70	2.90	T2	2.20	2.60
W3	1.17	1.37	L3	12.88	13.28	T3	0.45	0.60
W4	1.17	1.62	L4	(3.10)		G	3.50	3.70
W5	(8.00)		L5	(13.5)				

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