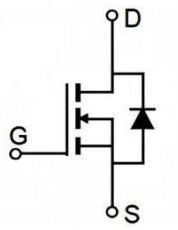
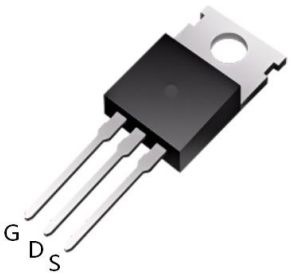
N-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	85	V
$R_{DS(on)}$	4.7	mΩ
I_D	120	A





TO-220

Features

- Advanced trench cell design
- Low Thermal Resistance

Applications

- Motor drives
- Power Tool
- BMS
- DC-DC converters

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	85	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	T_C=25℃	I_D	120	A
	T_C=100℃		90	
Peak Drain Current, Pulsed [1])		I_{DM}	480	A
Avalanche Current		I_{AS}	25	A
Single Pulse Avalanche Energy [2])		E_{AS}	150	mJ
Power Dissipation	T_C=25℃	P_{tot}	156	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	$R_{\theta JC}$	0.8	℃/W
Thermal Resistance from Junction to Ambient [3])	$R_{\theta JA}$	55	℃/W

Note：

1) Pulse Test: Pulse Width ≤ 00us, Duty Cycle ≤ 2%, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$ = 150°C.

2) Limited by $T_{J(MAX)}$, starting T_J = 25 °C, L = 0.5mH, R_g=25Ω, I_D=25A, V_{GS}=10V.

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	85	--	--	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=85V, 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	--	4.7	5.8	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS},I_D=250μA	2.0	--	4.0	V
Dynamic Parameters						
Gate resistance	R_g	at V_{DS} =0V, f=1MHz	--	1	--	Ω
Forward Transconductance	g_{fs}	at V_{DS}=5V, I_D=5A	--	22.7	--	S
Input Capacitance	C_{iss}	V_{GS}=0V,V_{DS}=50V, f=1MHz	--	4321	--	pF
Output Capacitance	C_{oss}		--	728	--	
Reverse Transfer Capacitance	C_{rss}		--	59	--	
Gate Charge Characteristics						
Total gate charge	Q_g	V_{DS}=50V,V_{GS}=10V, I_D=40A	--	81	--	nC
Gate-source charge	Q_{gs}		--	20	--	
Gate-drain charge	Q_{gd}		--	27	--	
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V,V_{DD}=50V, R_G=4.7Ω ,I_D=40A	--	36	--	nS
Rise time	t_r		--	77	--	
Turn-Off Delay Time	$t_{d(off)}$		--	31	--	
Fall time	t_f		--	34	--	
Source-Drain Diode Ratings And Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=1A	--	--	1.2	V
Reverse Recovery Time	t_{rr}	dIF/dt=100A/μs, I_S=40A	--	52	--	ns
Reverse Recovery Charge	Q_{rr}		--	73	--	nC

Typical Characteristics

Fig. 1 Typical Output Characteristic

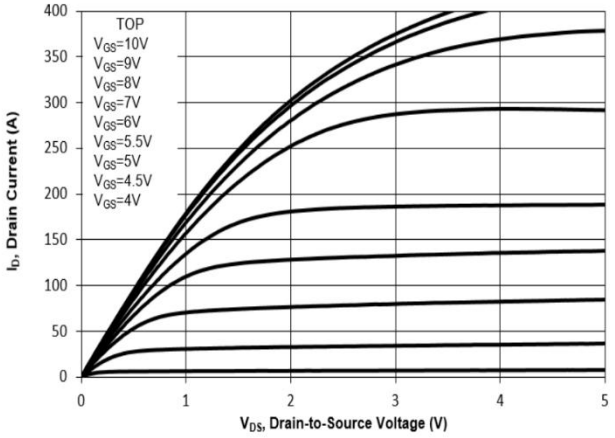


Fig. 2 Typical Transfer Characteristic

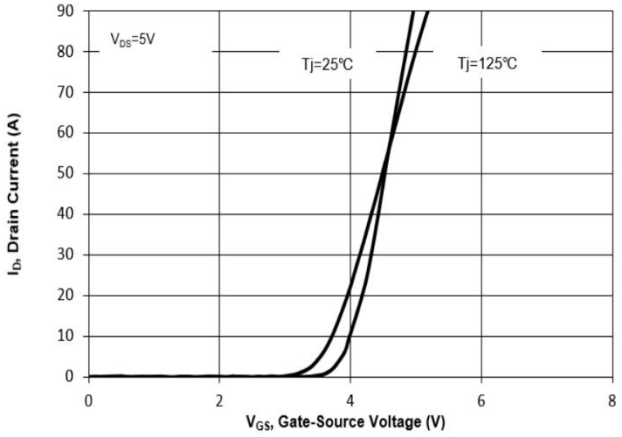


Fig. 3 on-Resistance vs Drain Current

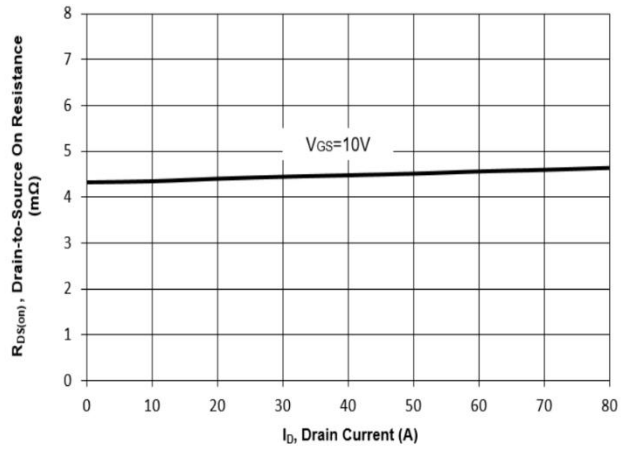


Fig. 4 on-Resistance vs. Gate Voltage

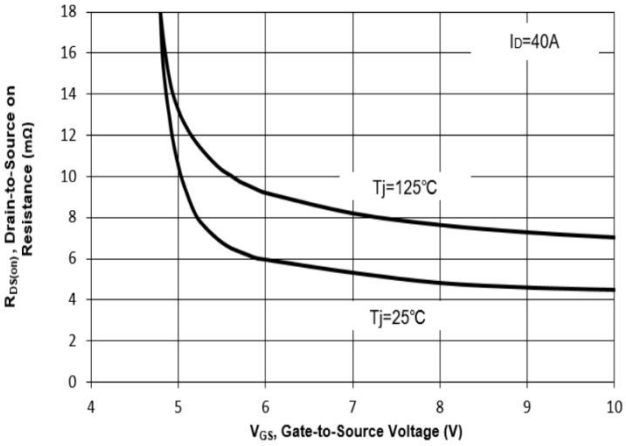


Fig. 5 on-Resistance vs.T_j

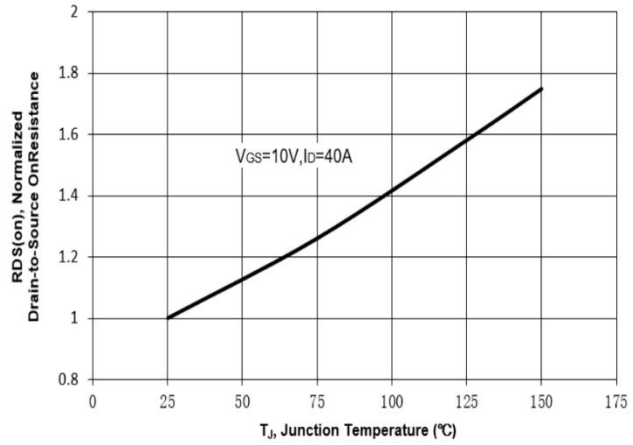


Fig. 6 Typical Body Diode Forward Characteristic

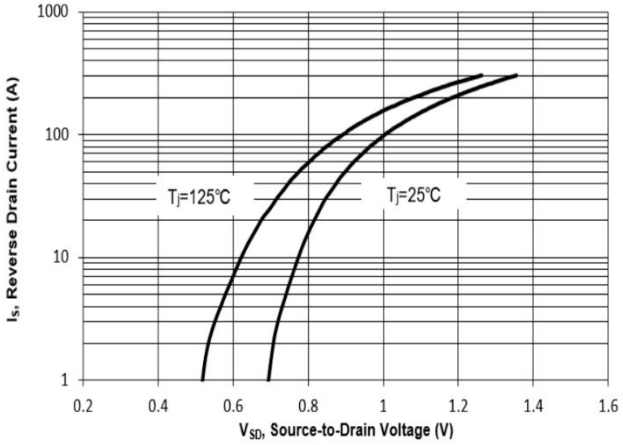


Fig. 7 Typical Junction Capacitance

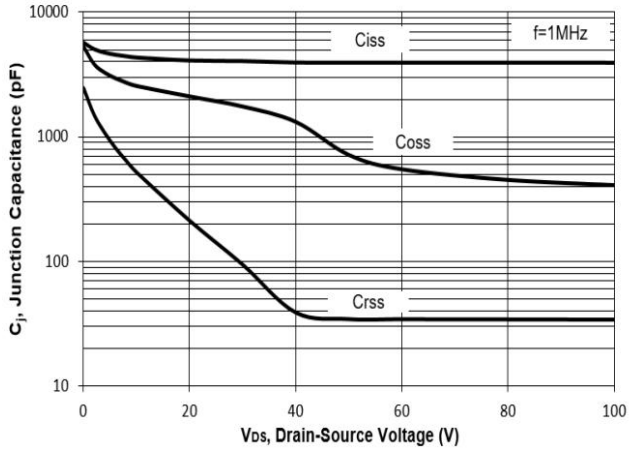


Fig. 8 Drain-Source Leakage Current vs. T_j

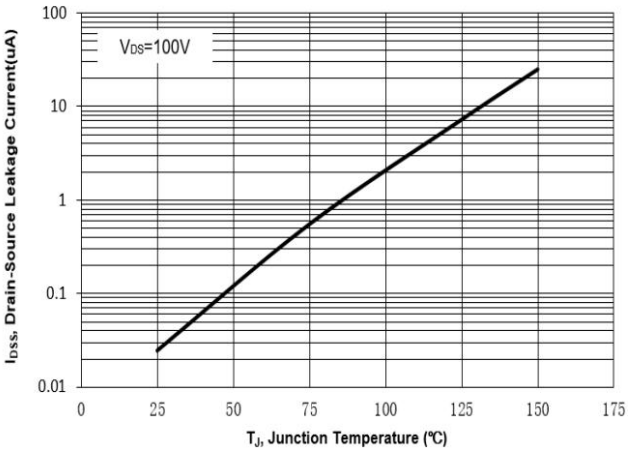


Fig. 9 $V_{(BR)DSS}$ vs. Junction Temperature

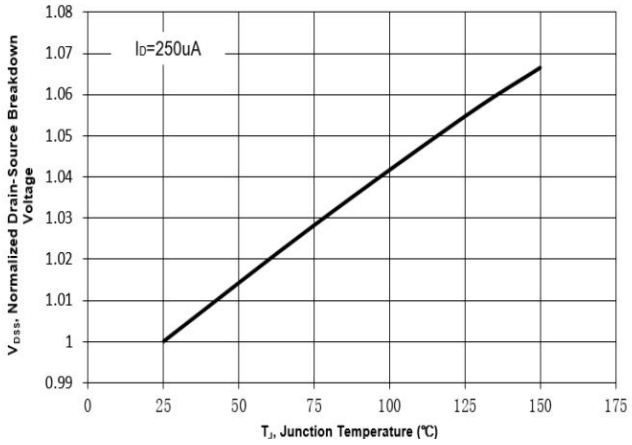


Fig. 10 Gate Threshold Variation vs. T_j

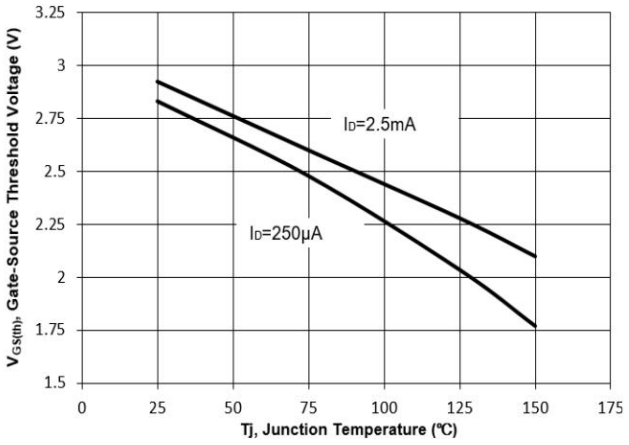


Fig. 11 Gate Charge

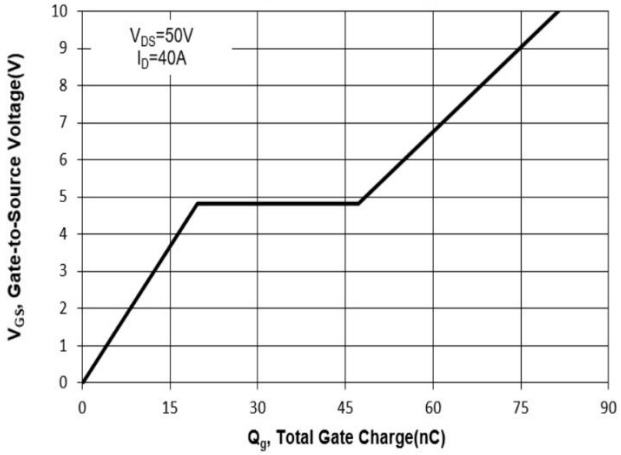


Fig. 12 Safe Operation Area

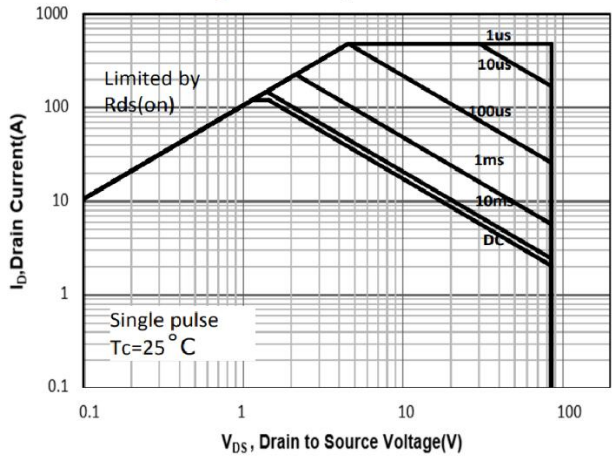
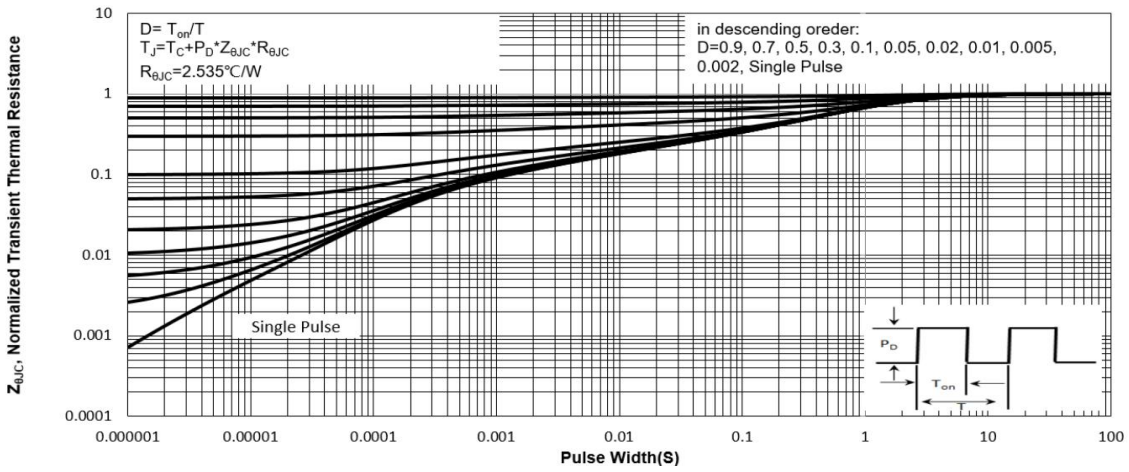
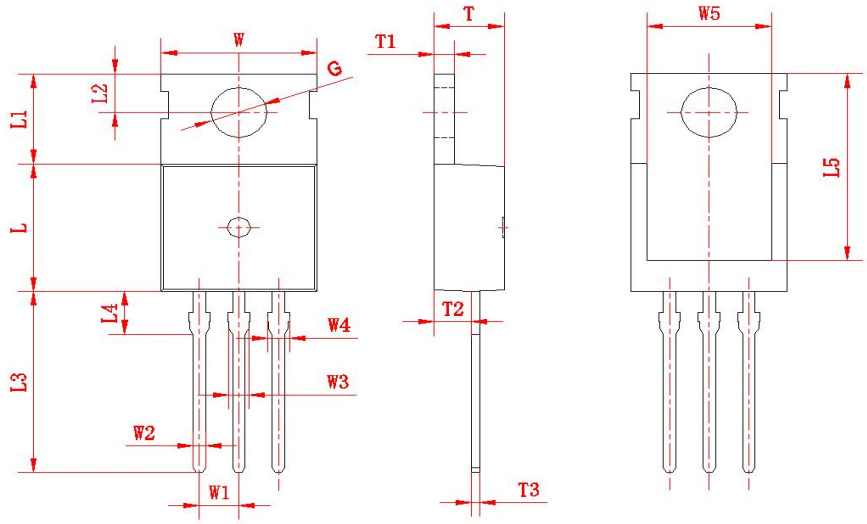


Fig. 13 Normalized Maximum Transient Thermal Impedance($Z_{\Theta JC}$)



Package Outline

TO-220



Symbol	Dimensions(mm)		Symbol	Dimensions(mm)		Symbol	Dimensions(mm)	
	Min	Max		Min	Max		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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