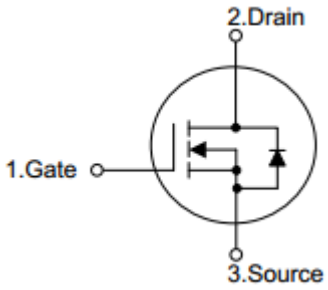
POWER MOSFET

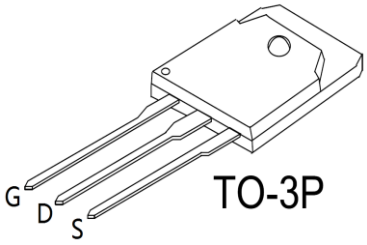
Features

- 500V,24A N-Channel MOSFET
- $R_{DS(on)(typ.)}$=0.18Ω @V_{GS}=10V
- High ruggedness
- Fast switching
- 100% avalanche tested
- Exceptional dv/dt capability



Applications

- Electric Welding
- Computer Power
- LCD Power
- Switching application
- Motor drive



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	500	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Continuous Drain Current(TC=25℃)	24	A
	Continuous Drain Current(TC=100℃)	19	A
I_{DM}	Pulsed Drain Current(Note 1)	96	A
EAS	Single Pulsed Avalanche Energy(Note 2)	1100	mJ
P_D	Maximum Power Dissipation (T_C=25℃)	290	W
T_J	Maximum Junction Temperature	150	℃
T_{STG}	Storage Temperature Range	-55 to +150	℃

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature

2.Starting T_J=25℃,L=3.4mH,R_G=25Ω,I_D=24A,V_{GS}=10V

Thermal data

Symbol	Parameter	Max.	Units
$R_{th\ J-C}$	Thermal Resistance, Junction to case	0.43	℃/ W
$R_{th\ J-A}$	Thermal Resistance, Junction to air	40	℃/ W

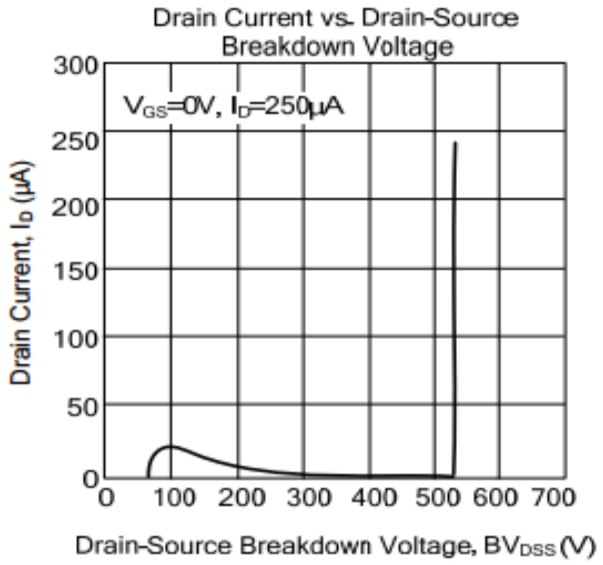
Electrical Characteristics (TC=25℃ unless otherwise noted)

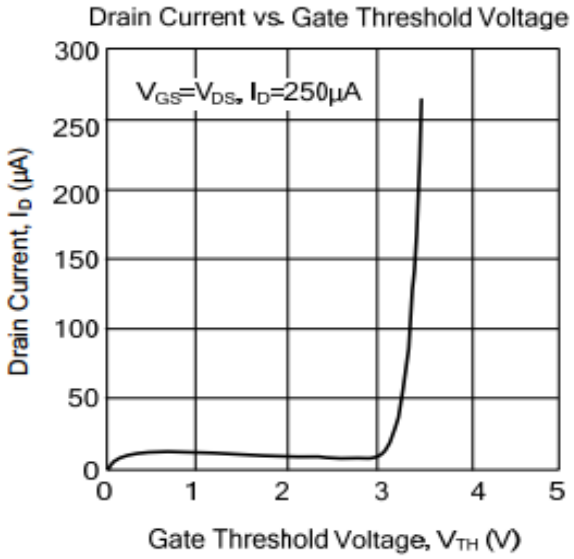
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	500			V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=500V, V_{GS}=0V			50	uA
I_{GSS}	Gate Leakage Current, Forward	V_{GS}=25V, V_{DS}=0V			100	nA
	Gate Leakage Current, Reverse	V_{GS}= -25V, V_{DS}=0V			-100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250uA	2	3	4	V
$R_{DS(on)}$	Collector-Emitter Saturation Voltage	V_{GS}=10V, I_D=12A		0.15	0.18	mΩ
gfs	Forward Transconductance	V_{DS}=10V, I_D=10A	4.0	14		S
Q_g	Total Gate Charge	V_{DS}=400V V_{GS}=10V I_D=24A		90	120	nC
Q_{gs}	Gate-Source Charge			23		nC
Q_{gd}	Gate-Drain Charge			52		nC
$t_{d(on)}$	Turn-on Delay Time	VDD=250V,RL=20Ω VGEN=10V ID=24A RG=25Ω	-	80	170-	ns
t_r	Turn-on Rise Time		-	250	500	ns
$t_{d(off)}$	Turn-off Delay Time		-	200	400	ns
t_f	Turn-off Fall Time		-	155	320	ns
C_{iss}	Input Capacitance	V_{DS}=25V V_{GS}=0V f = 1MHz	-	3500	4500	pF
C_{oss}	Output Capacitance		-	520	670	pF
C_{rss}	Reverse Transfer Capacitance		-	55	70	pF

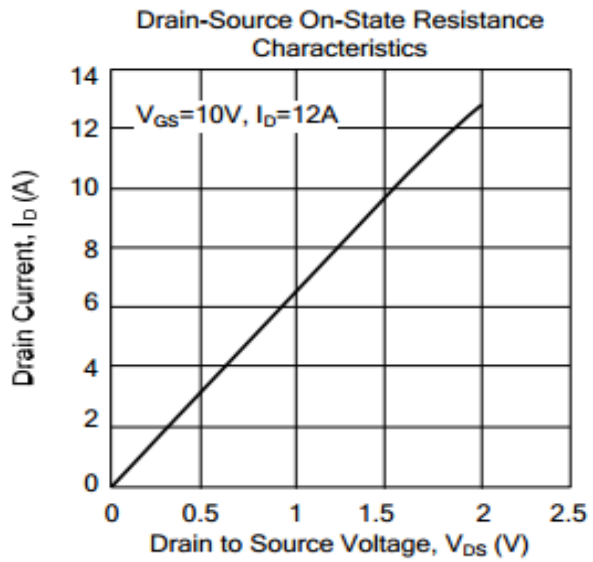
Source-Drain Ratings and Characteristics (T_C=25℃ unless otherwise noted)

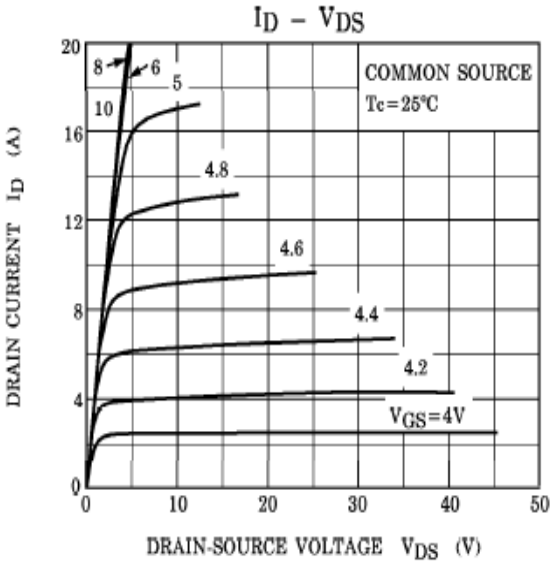
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage	V_{GS}=0V,I_{SD}=20A	-	-	1.4	V
I_S	Continuous Diode Forward Current				24	A
t_{rr}	Reverse Recovery Time	I_{SD}=60A dI_F/dt=100A/us	-	250		ns
Q_{rr}	Reverse Recovery Charge		-	1.1		uC

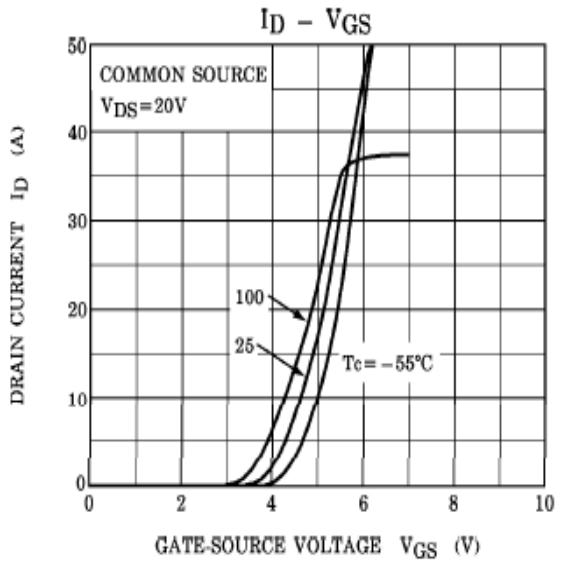
Typical Characteristics

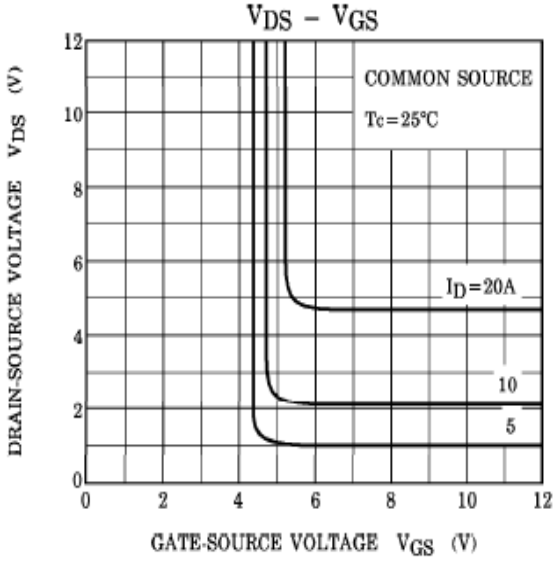


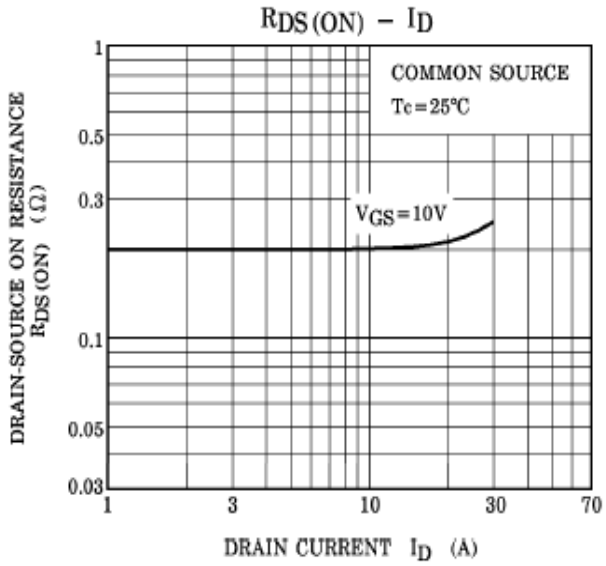




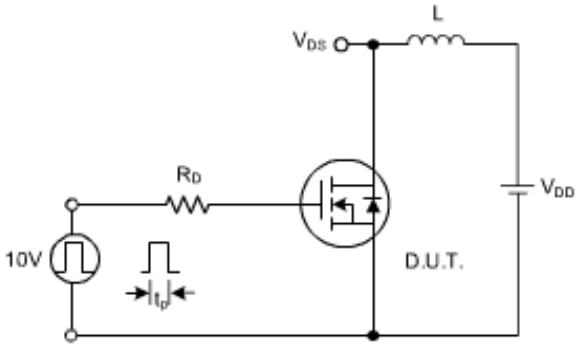


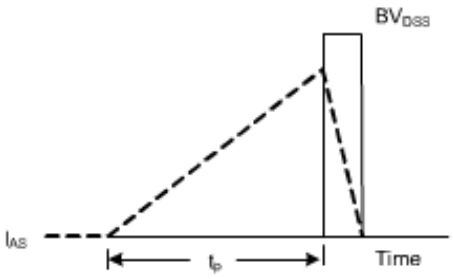






Avalanche test circuits and waveforms





Gate charge test circuits and waveforms