

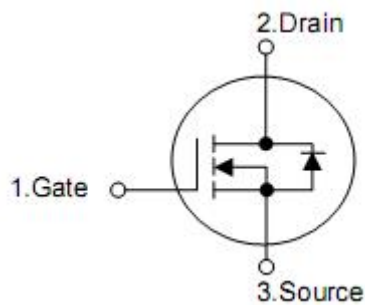
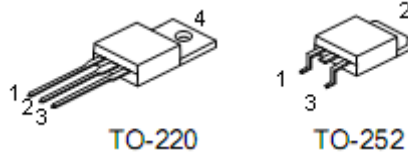
1. Features

- n $R_{DS(on)}=10.5m\Omega @ V_{GS}=10V$
- n Lead free and green device available
- n Low Rds-on to minimize conductive loss
- n High avalanche current

2. Applications

- n Power supply
- n UPS
- n Battery management system

3.Symbol



Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

4. Absolute maximum ratings

($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter		Symbol	Rating	Units
Drain-source voltage		V_{DSS}	60	V
Gate-source voltage		V_{GSS}	± 25	V
Continuous drain current	$T_C=25^{\circ}\text{C}$	I_D^3	50	A
	$T_C=100^{\circ}\text{C}$		35	A
Pulse drain current	$T_C=25^{\circ}\text{C}$	I_{DP}^4	250	A
Avalanche current		I_{AS}^5	15	A
Avalanche energy,		E_{AS}^5	120	mJ
Maximum power dissipation	$T_C=25^{\circ}\text{C}$	P_D	88	W
	$T_C=100^{\circ}\text{C}$		44	W
Junction & storage temperature range		T_J, T_{STG}	-55-175	$^{\circ}\text{C}$

5. Thermal characteristics

Parameter	Symbol	Rating		Unit
		To-252	To-220	
Thermal resistance, Junction-ambient	$R_{\theta JA}$	100	62.5	$^{\circ}\text{C}/\text{W}$
Thermal resistance, Junction-case	$R_{\theta JC}$	1.1	1.7	$^{\circ}\text{C}/\text{W}$

6. Electrical characteristics

($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=250\mu A$	60	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=48V, V_{GS}=0V$	-	-	1	μA
		$T_J=125^{\circ}\text{C}$	-	-	20	
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
Gate leakage current	I_{GSS}	$V_{GS}=\pm 25V, V_{DS}=0V$	-	-	± 100	nA
Drain-source on-resistance	$R_{DS(on)}^1$	$V_{GS}=10V, I_D=30A$	-	10.5	12.5	m Ω
Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	-	1.0	-	Ω
Diode forward voltage	V_{SD}^1	$I_{SD}=30A, V_{GS}=0V$	-	0.8	1.3	V
Diode continuous forward current	I_S^3		-	-	50	A
Reverse recovery time	t_{rr}	$I_F=30A,$ $di_{SD}/dt=100A/\mu s$	-	32	-	nS
Reverse recovery charge	Q_{rr}		-	60	-	nC
Input capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $f=1\text{MHz}$	-	2060	-	μF
Output capacitance	C_{oss}		-	755	-	
Reverse transfer capacitance	C_{rss}		-	375	-	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=30V, I_D=30A,$ $R_G=5\Omega, V_{GS}=10V$	-	14	-	nS
Rise time	t_r		-	13	-	
Turn-off delay time	$t_{d(off)}$		-	20	-	
Fall time	t_f		-	7.5	-	
Total gate charge	Q_g	$V_{DS}=48V, V_{GS}=10V$ $I_{DS}=30A$	-	50	-	nC
Gate-source charge	Q_{gs}		-	12	--	
Gate-drain charge	Q_{gd}		-	17	--	

Note:1: Pulse test; pulse width $\leq 300\mu s$ duty cycle $\leq 2\%$.

2: Guaranteed by design, not subject to production testing.

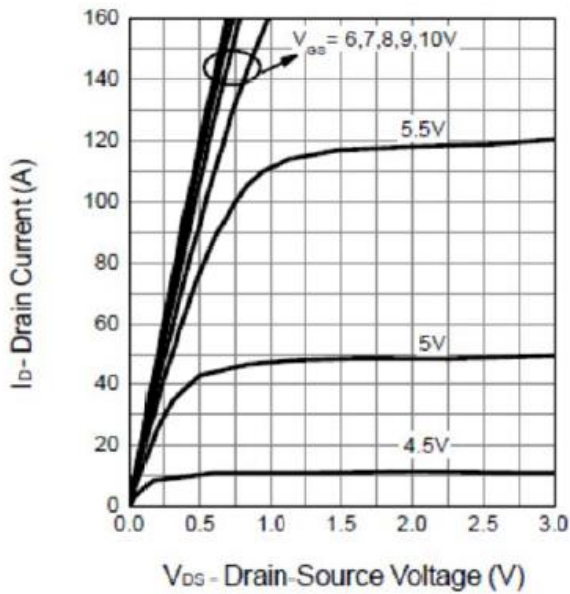
3: Package limitation current is 50A. Calculated continuous current based on maximum allowable junction temperature.

4: Repetitive rating, pulse width limited by max junction temperature.

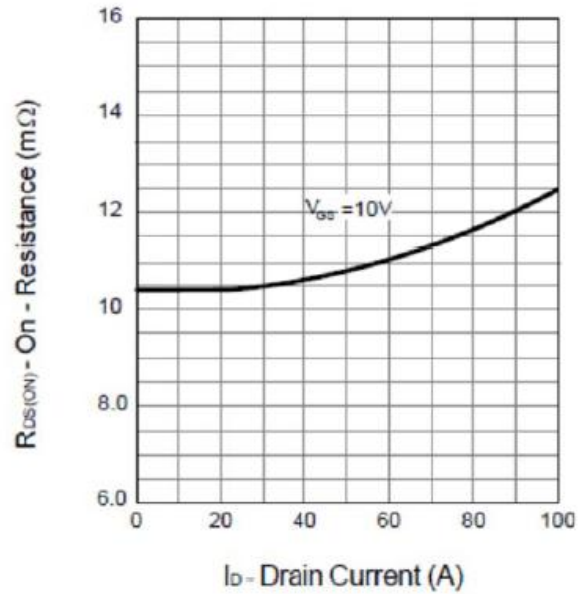
5: Starting $T_J=25^{\circ}\text{C}, L=0.5\text{mH}, I_{AS}=31A$.

7. Test circuits and waveforms

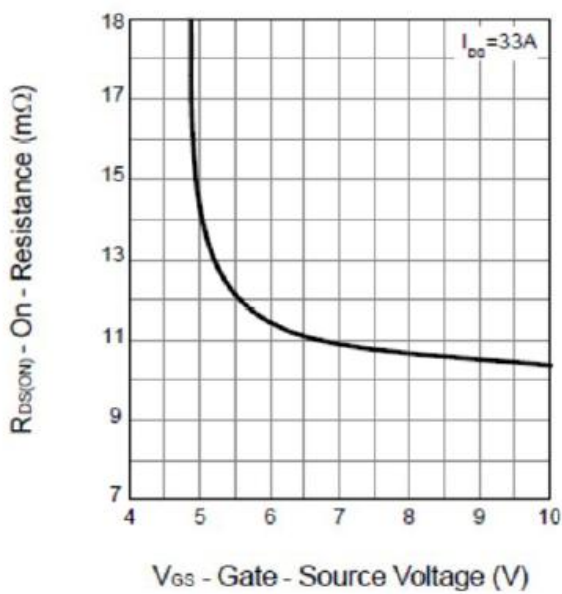
Output Characteristics



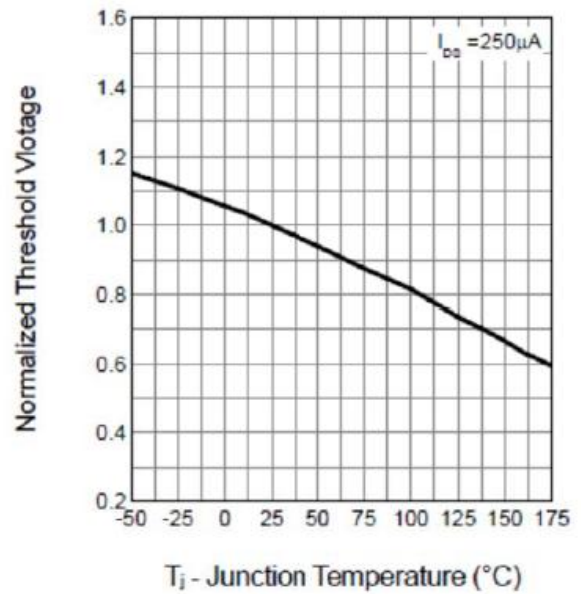
Drain-Source On Resistance



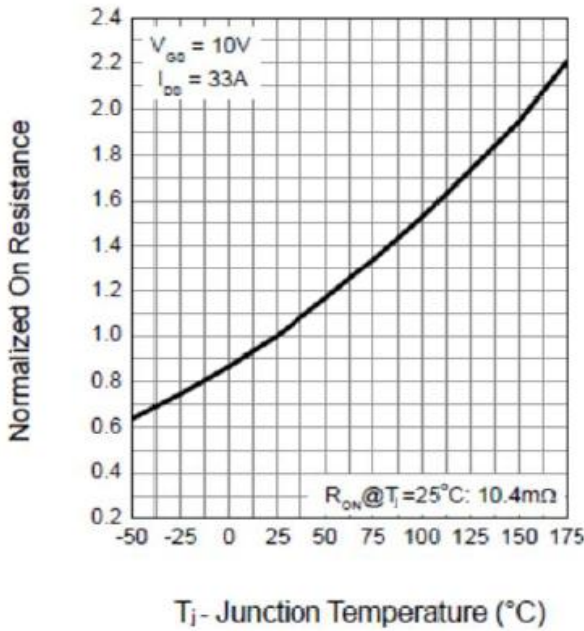
Drain-Source On Resistance



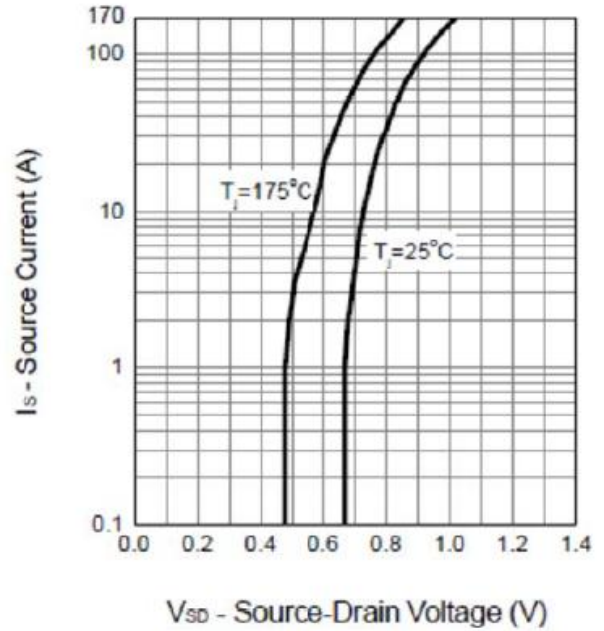
Gate Threshold Voltage



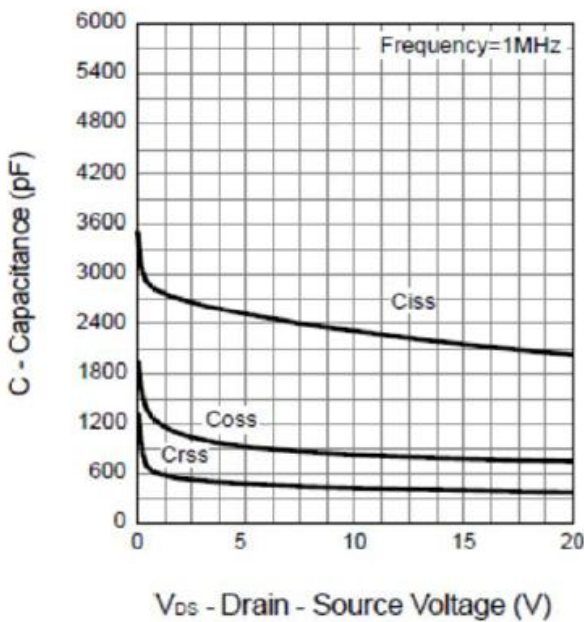
Drain-Source On Resistance



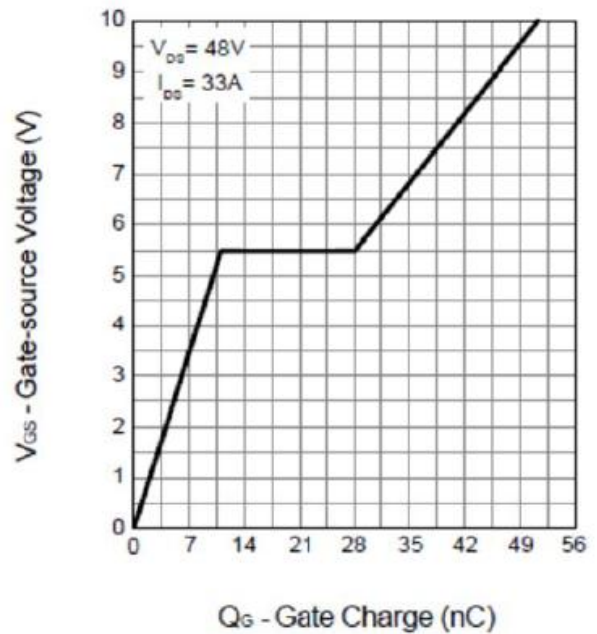
Source-Drain Diode Forward



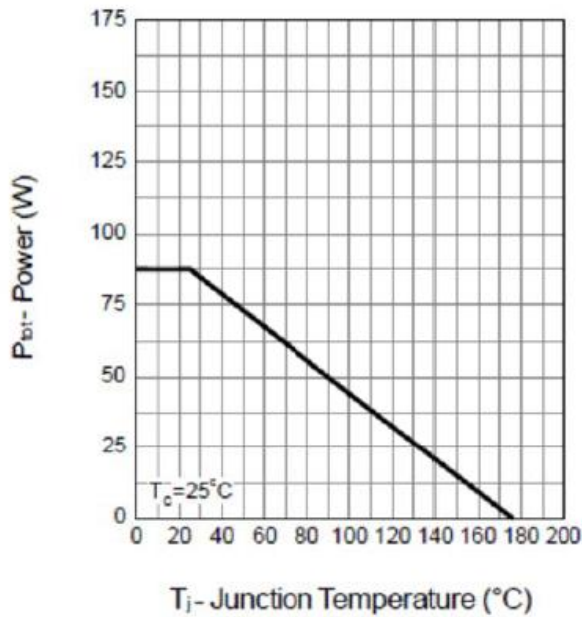
Capacitance



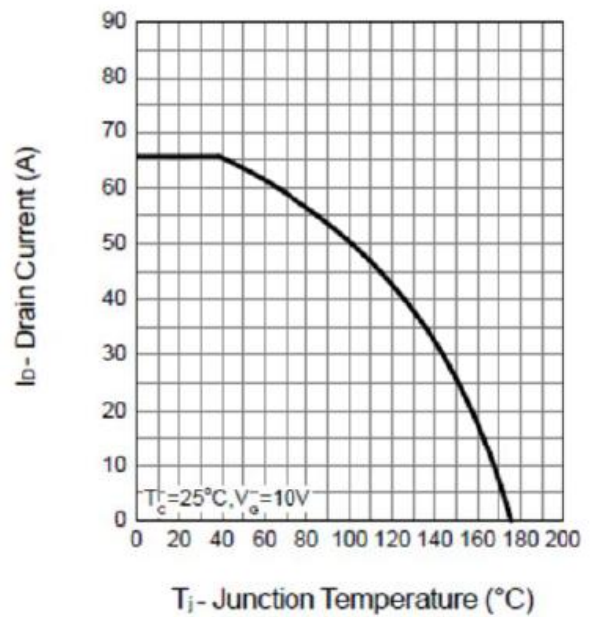
Gate Charge



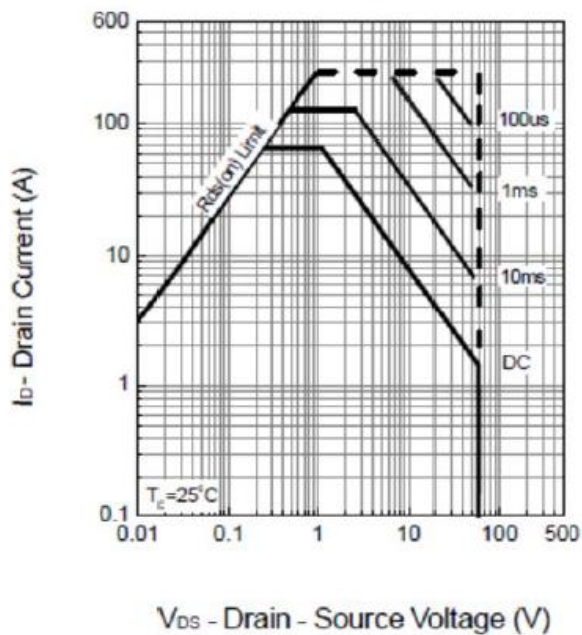
Power Dissipation



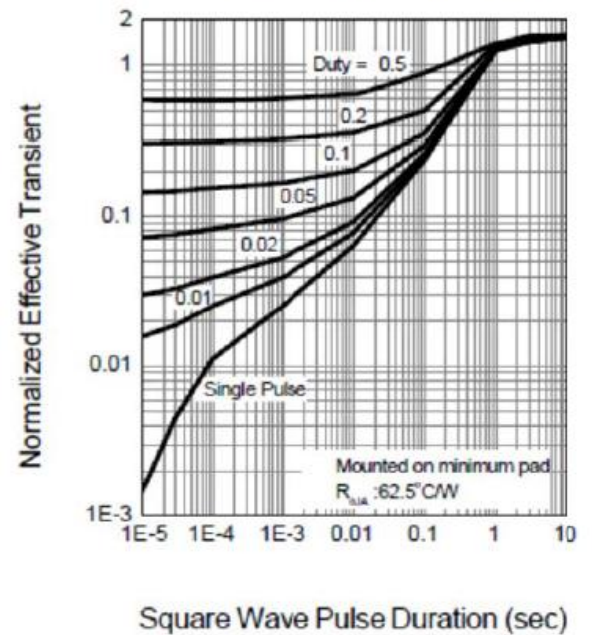
Drain Current



Safe Operation Area



Thermal Transient Impedance



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