

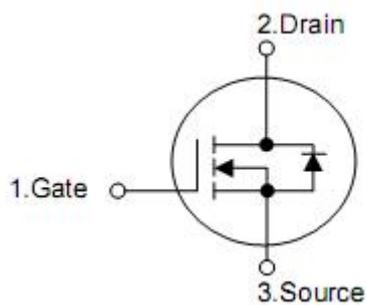
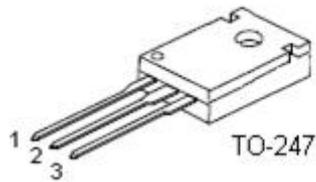
1. Features

- n $R_{DS(on)}=5.5m\Omega @ V_{GS}=10V$
- 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 Power Tool

3. Symbol



Pin	Function
1	Gate
2	Drain
3	Source

4. Absolute maximum ratings

Parameter		Symbol	Rating	Units
Drain-source voltage		V_{DSS}	60	V
Gate-source voltage		V_{GSS}	± 25	V
Junction and storage temperature range		T_{STG}	-55 to 175	°C
Continuous drain current	$T_C=25^\circ\text{C}$	I_D^3	130	A
	$T_C=100^\circ\text{C}$		90	A
Pulse drain current	$T_C=25^\circ\text{C}$	I_{DP}^4	360	A
Avalanche current		I_{AS}^5	25	A
Maximum power dissipation		E_{AS}^5	250	mJ
Maximum power dissipation	$T_C=25^\circ\text{C}$	P_D	200	W
	$T_C=100^\circ\text{C}$		90	W

5. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal resistance, Junction-ambient	$R_{\theta JA}$	62.5	°C/W
Thermal resistance, Junction-case	$R_{\theta JC}$	0.735	°C/W

6. Electrical characteristics

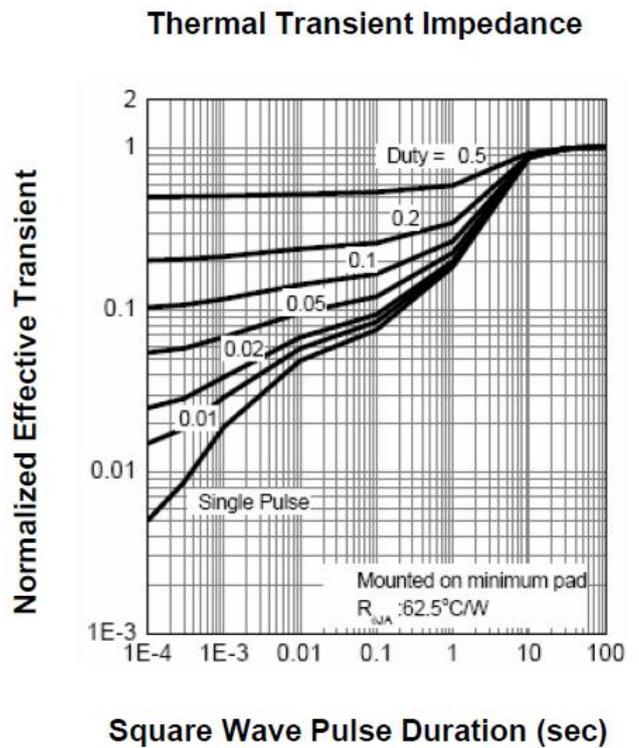
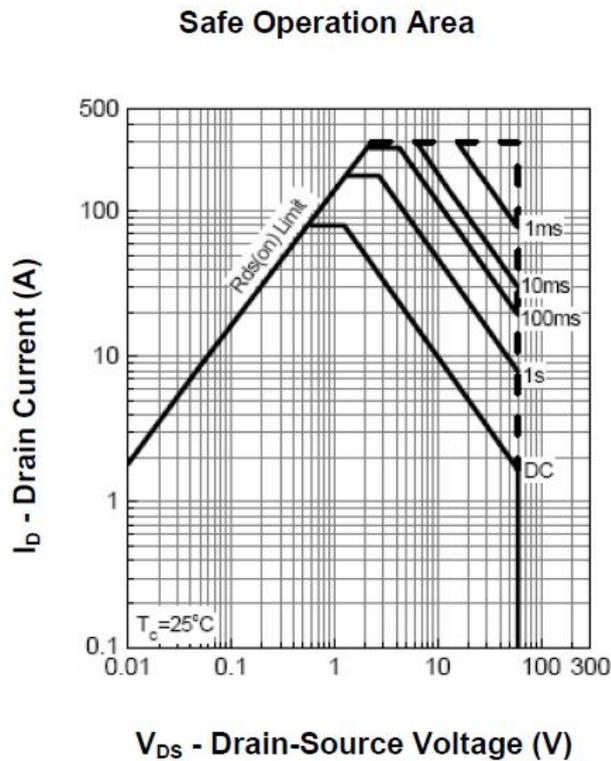
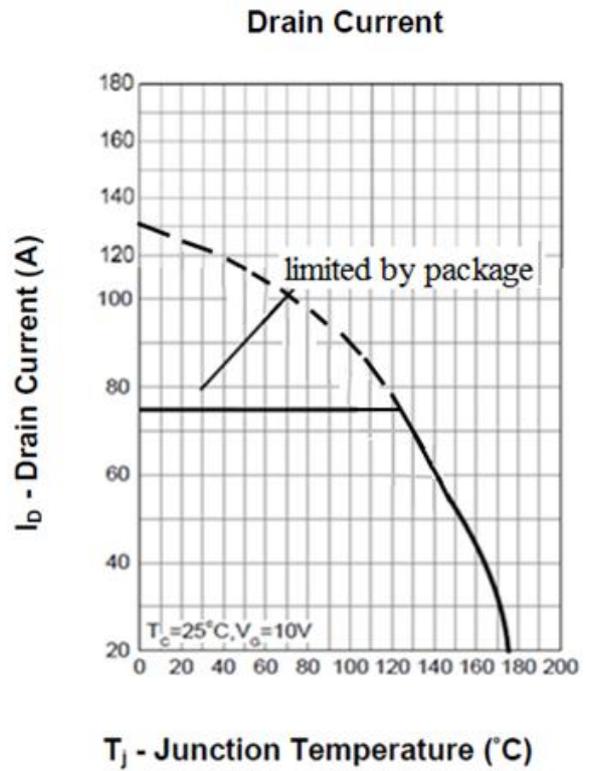
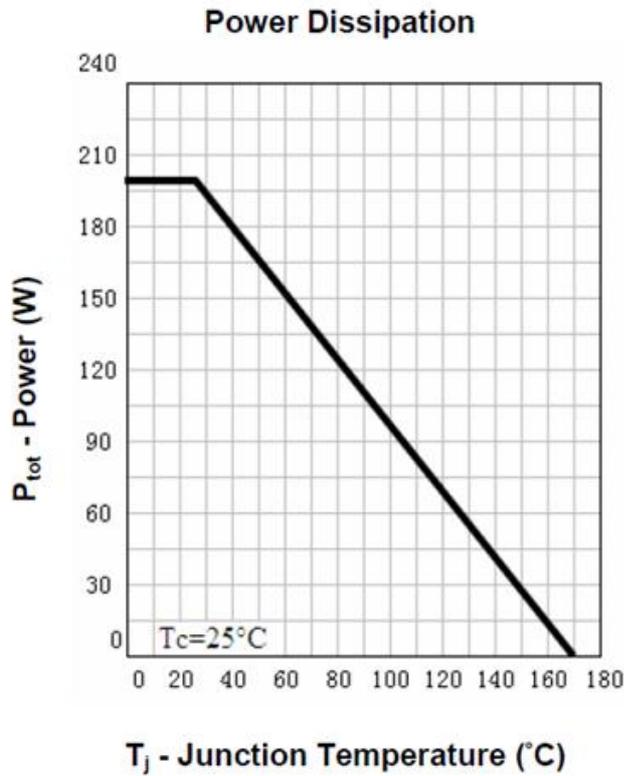
($T_A=25^\circ\text{C}$, unless otherwise noted)

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
		$T_J=125^\circ\text{C}$	-	-	30	
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
Gate leakage current	I_{GSS}	$V_{GS}=\pm 25V, V_{DS}=0V$	-	-	± 100	nA
Drain-source on-state resistance	$R_{DS(on)}^1$	$V_{GS}=10V, I_D=50A$	-	5.5	7	m Ω
Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	-	1.2	-	Ω
Diode forward voltage	V_{SD}^1	$I_{SD}=50A, V_{GS}=0V$	-	0.88	1.3	V
Diode continuous forward current	I_S^3		-	-	50	A
Reverse recovery time	t_{rr}	$I_{SD}=70A, V_{DD}=50V,$ $di_{SD}/dt=100A/\mu s$	-	15.2	-	nS
Reverse recovery charge	Q_{rr}		-	6.16	-	nC
Input capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $f=1\text{MHz}$	-	3100	-	μF
Output capacitance	C_{oss}		-	926	-	
Reverse transfer capacitance	C_{rss}		-	451	-	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=30V, I_D=70A,$ $R_G=25\Omega, V_{GS}=10V$	-	20	-	ns
Rise time	t_r		-	83.7	-	
Turn-off delay time	$t_{d(off)}$		-	108	-	
Fall time	t_f		-	92.6	-	
Total gate charge	Q_g	$V_{DS}=50V, V_{GS}=10V$ $I_D=70A$	-	66.34	-	nC
Gate-source charge	Q_{gs}		-	12.35	--	
Gate-drain charge	Q_{gd}		-	33.52	--	

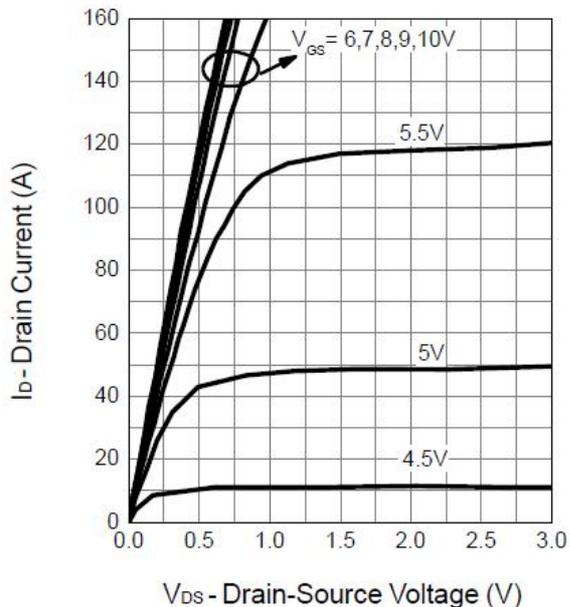
Note:1. Pulse test; pulse width $\leq 300\mu s$ duty cycle $\leq 2\%$.

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 $T_J=25^\circ\text{C}, L=0.4\text{mH}, I_{AS}=50A$.

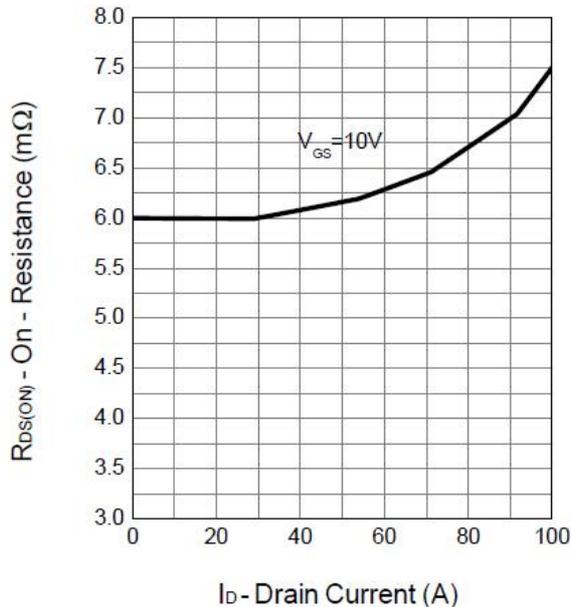
7. Test circuits and waveforms



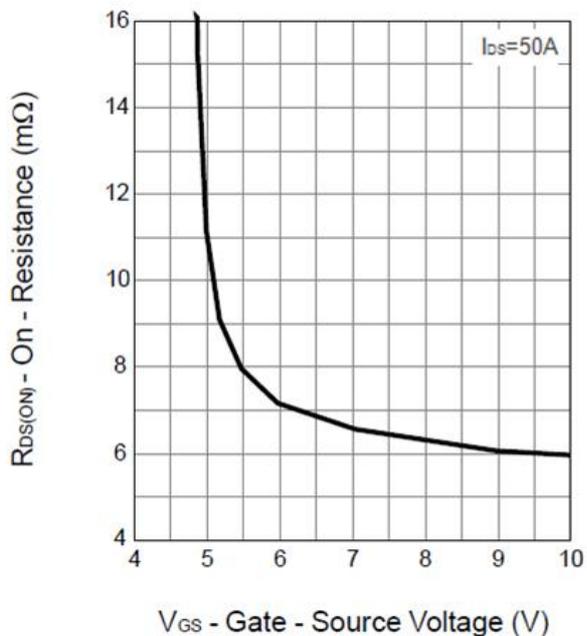
Output Characteristics



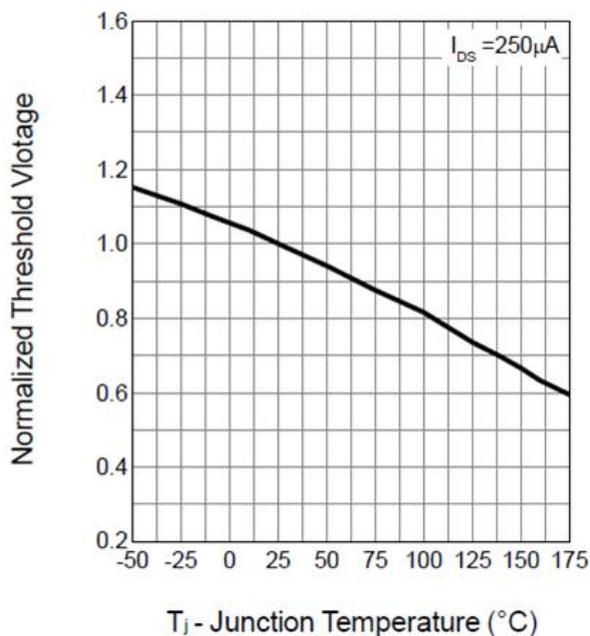
Drain-Source On Resistance



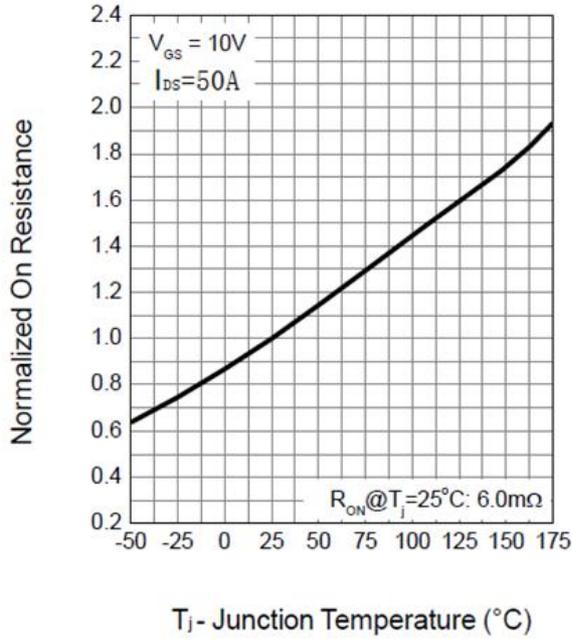
Drain-Source On Resistance



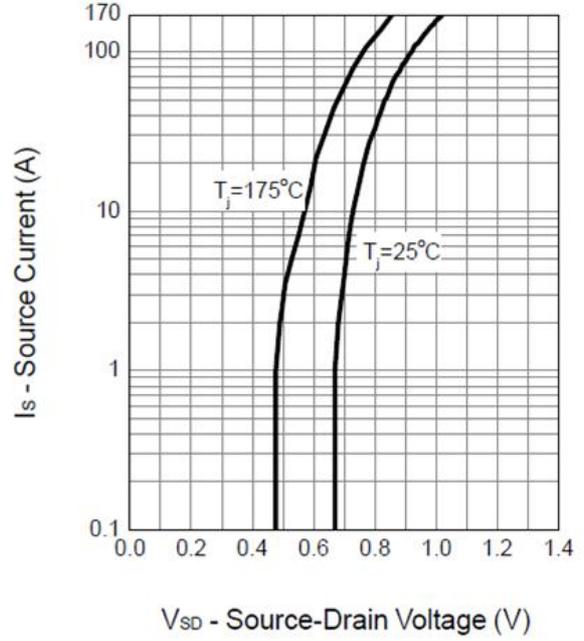
Gate Threshold Voltage



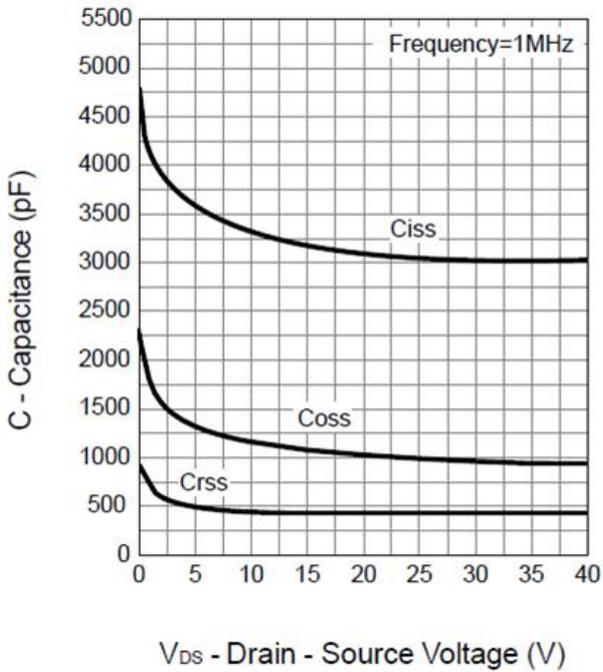
Drain-Source On Resistance



Source-Drain Diode Forward



Capacitance



Gate Charge

