

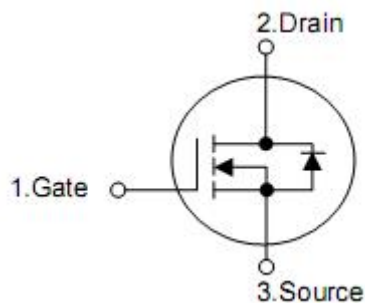
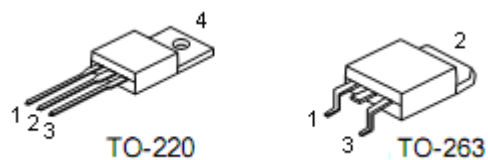
1. Features

- n $R_{DS(ON)}=7m\Omega@V_{GS}=10V$
- 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 DC-DC converters

3. Pin configuration



Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

4. Absolute maximum ratings

Parameter		Symbol	Maximum	Units
Drain-source voltage		V_{DSS}	80	V
Gate-source voltage		V_{GSS}	+25	V
Continuous drain current	$T_C=25\text{ }^\circ\text{C}$	I_D^3	80	A
	$T_C=100\text{ }^\circ\text{C}$		70	A
Pulse drain current	$T_C=25\text{ }^\circ\text{C}$	I_{DP}^4	340	A
Avalanche current		I_{AS}^5	20	A
Avalanche energy		E_{AS}^5	410	mJ
Maximum power dissipation	$T_C=25\text{ }^\circ\text{C}$	P_D	240	W
	$T_C=100\text{ }^\circ\text{C}$		100	W
Junction & storage temperature range		T_J, T_{STG}	-55~175	$^\circ\text{C}$

5. Thermal characteristics

Parameter	Symbol	Typical	Units
Thermal resistance-junction to case	$R_{\theta jc}$	0.52	$^\circ\text{C/W}$
Thermal resistance-junction to ambient	$R_{\theta ja}$	55	

6. Electrical characteristics

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=250\mu A$	80	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=64V, V_{GS}=0V$ $T_J=125^\circ\text{C}$	-	-	1	μA
			-	-	100	
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2	3	4	V
Gate leakage current	I_{GSS}	$V_{GS}=\pm 25V, V_{DS}=0V$	-	-	± 100	nA
Drain-source on-state resistance	$R_{DS(on)}^1$	$V_{GS}=10V, I_{DS}=40A$	-	7	9	m Ω
Diode characteristics						
Diode forward voltage	V_{SD}^1	$I_{SD}=40A, V_{GS}=0V$	-	-	1.3	V
Diode continuous forward current	I_S^3		-	-	80	A
Reverse recovery time	t_{rr}	$I_F=40A, di/dt=100A/\mu s$	-	25	-	nS
Reverse recovery charge	Q_{rr}		-	18.5	-	nC
Dynamic characteristics ²						
Gate resistance	R_G	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	-	1.3	-	Ω
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V,$ $F=1.0\text{MHz}$	-	3110	-	pF
Output capacitance	C_{oss}		-	445	-	
Reverse transfer capacitance	C_{rss}		-	270	-	
Turn-on delay time	$t_{d(ON)}$	$V_{DD}=37.5V, I_D=40A,$ $V_{GS}=10V, R_G=6.8\Omega$	-	20.4	-	nS
Turn-on rise time	t_r		-	63	-	
Turn-off delay time	$t_{d(OFF)}$		-	67	-	
Turn-off fall time	t_f		-	43	-	
Gate charge characteristics ²						
Total gate charge	Q_g	$V_{DS}=37.5V, V_{GS}=10V,$ $I_D=40A,$	-	76	-	nC
Gate-source charge	Q_{gs}		-	9.5	-	
Gate-drain charge	Q_{gd}		-	40	-	

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

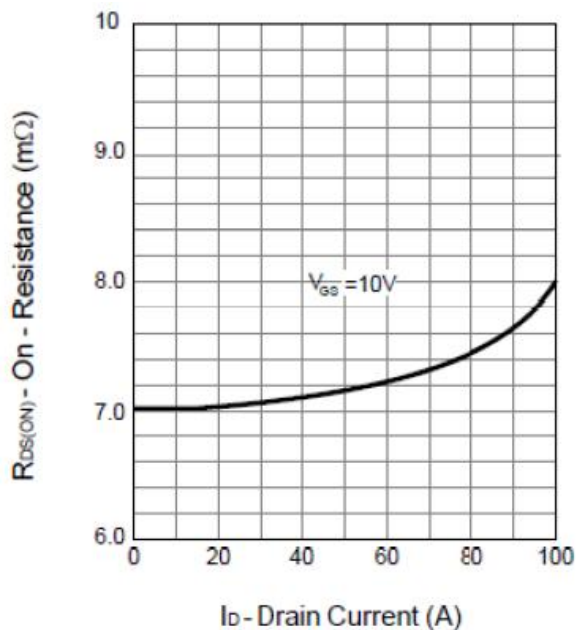
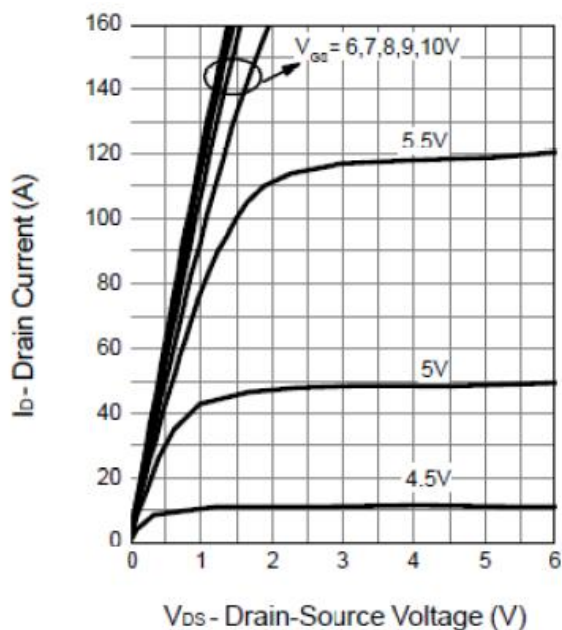
2. Guaranteed by design, not subject to production testing.

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

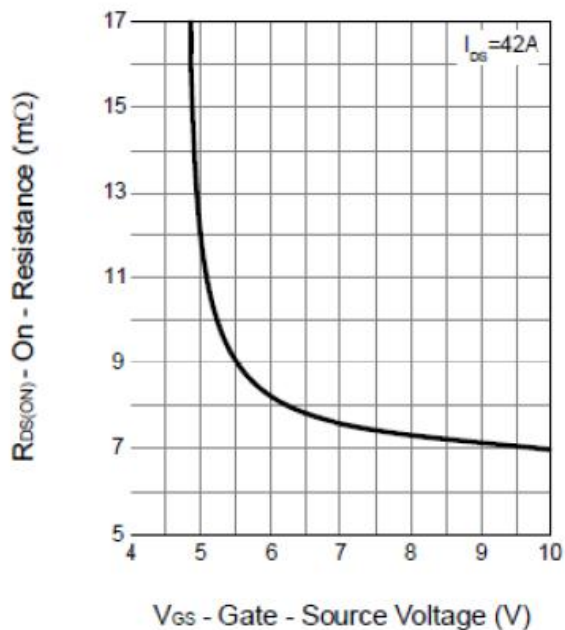
4. Repetitive rating, pulse width limited by max junction temperature.

5. Starting $T_J=25^\circ\text{C}$, $L=1\text{mH}$, $I_{AS}=40A$.

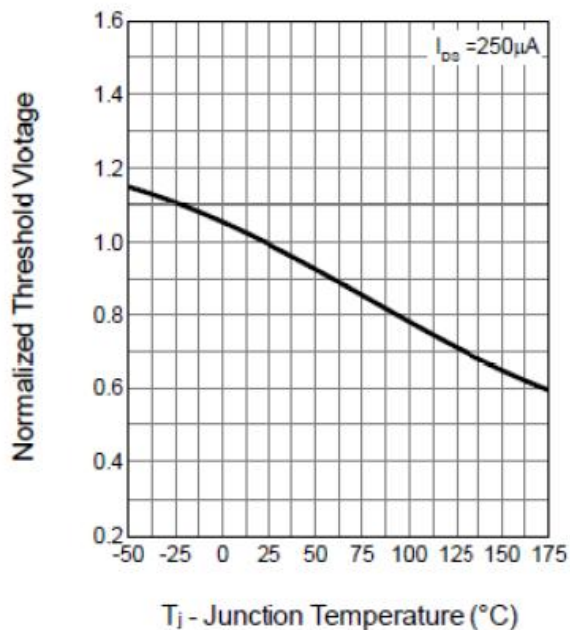
7. Test circuits and waveforms



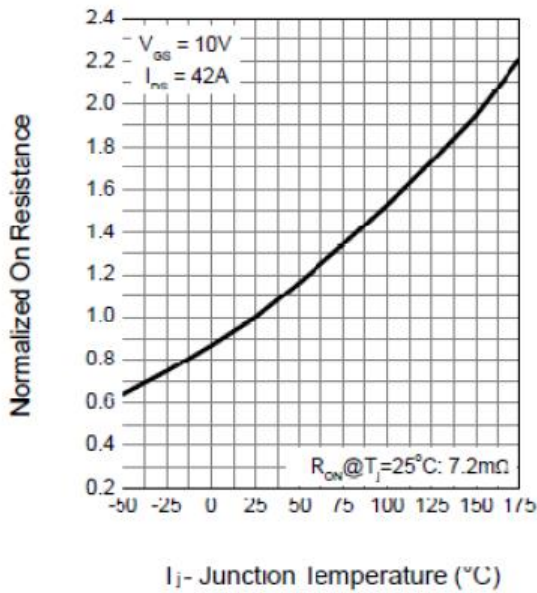
Drain-Source On Resistance



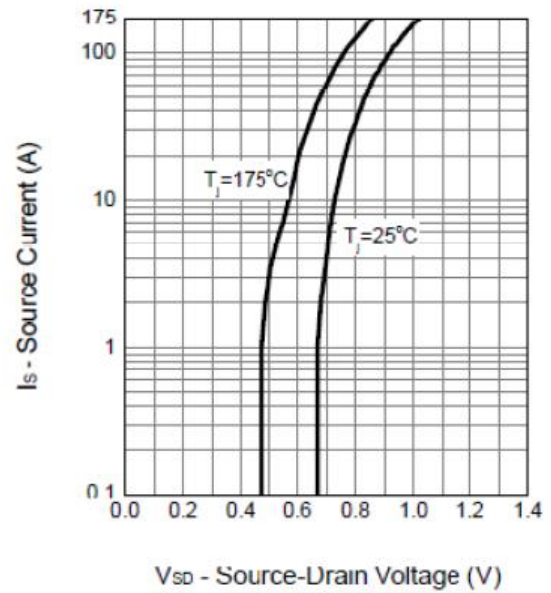
Gate Threshold Voltage



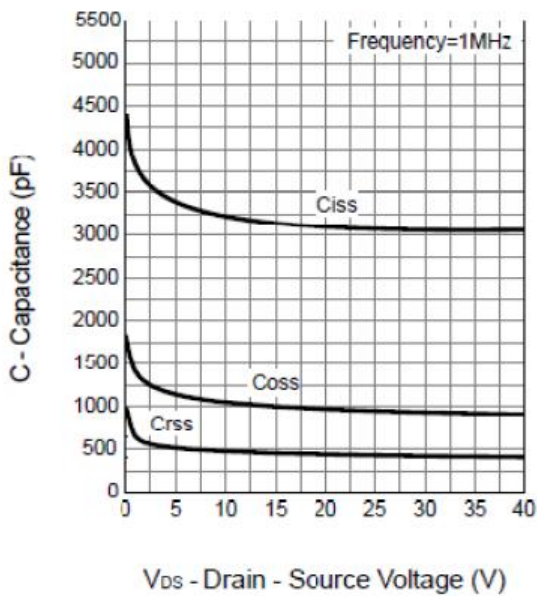
Drain-Source On Resistance



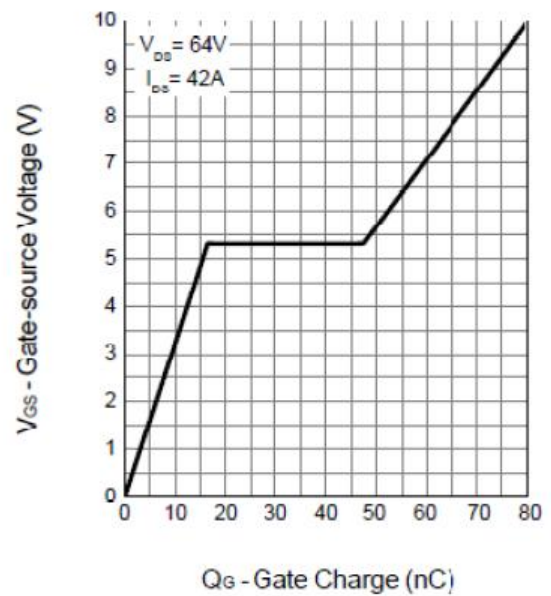
Source-Drain Diode Forward



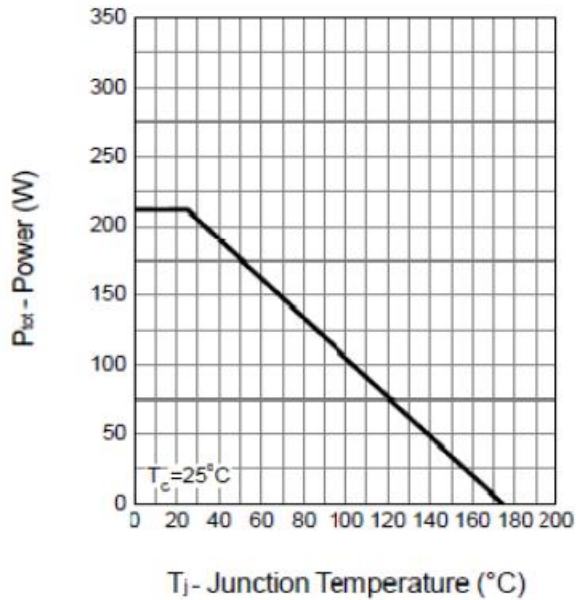
Capacitance



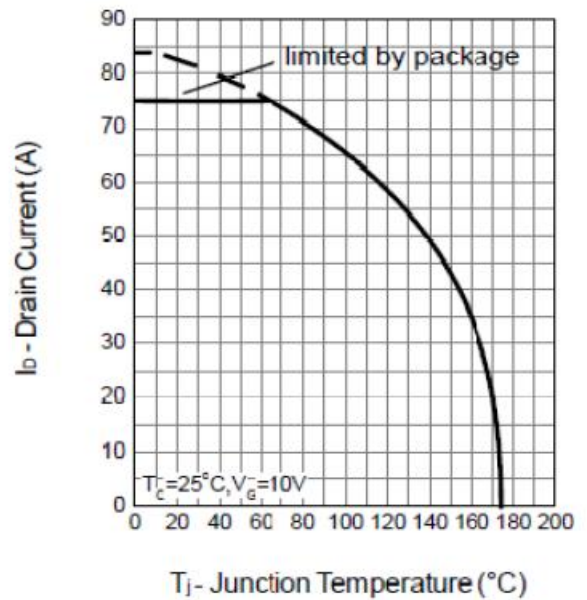
Gate Charge



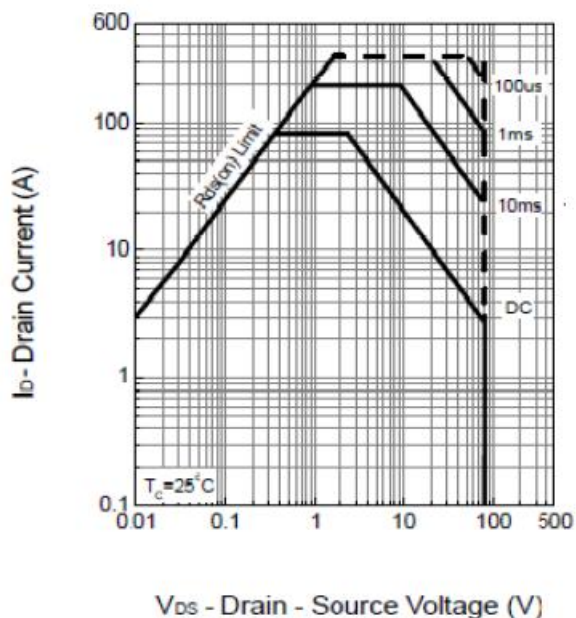
Power Dissipation



Drain Current



Safe Operation Area



Thermal Transient Impedance

