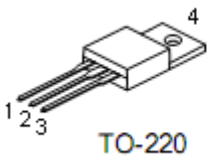
1. Features

- $R_{DS(on)}$=9mΩ（typ.）@ V_{GS}=10V
- 100% avalanche tested
- Reliable and rugged
- Lead free and green device available（RoHS Compliant）

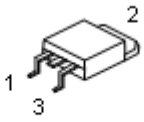
2. Applications

- Switching application
- Power management for inverter systems

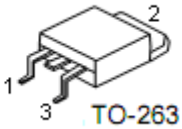
3.Symbol



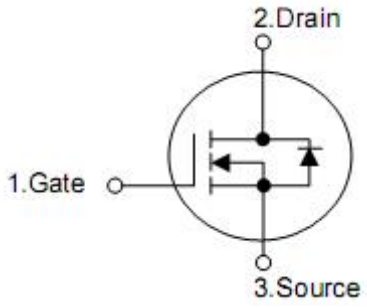
TO-220



TO-252



TO-263



Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

4. Absolute maximum ratings

(T_A=25°C,unless otherwise noted)

Parameter		Symbol	Rating		Units
			To-220/263	To-252	
Drain-source voltage		V_{DSS}	100		V
Gate-source voltage		V_{GSS}	±25		V
Maximum junction temperature		T_J	175		ºC
Storage temperature range		T_{STG}	-55 to175		ºC
Continuous drain current	T_C=25ºC	I_D[3]	75	65	A
	T_C=100ºC		51	44	A
Pulsed drain current	T_C=25ºC	I_{DP}[4]	219		A
Avalanche current		I_{AS}[5]	30		A
Avalanche energy		E_{AS}[5]	225		mJ
Maximum power dissipation	T_C=25 ºC	P_D	166		W
	T_C=100ºC		83		W

5. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal resistance,Junction-ambient	$R_{\theta JA}$	62.5	ºC/W
Thermal resistance,Junction-case	$R_{\theta JC}$	0.9	ºC/W

6. Electrical characteristics

(T_A=25°C,unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V,I_{DS}=250Ma	100	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=80V, V_{GS}=0V	-	-	1	μA
		T_J=125°C	-	-	20	
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2.0	3.0	4.0	V
Gate leakage current	I_{GSS}	V_{GS}=±25V, V_{DS}=0V	-	-	±100	nA
Drain-source on-state resistance	$R_{DS(on)}$[1]	V_{GS}=10V,I_{DS}=50A (TO-220\TO-263)	-	9	11	mΩ
		V_{GS}=10V,I_{DS}=50A (TO-252)		9	14	
Gate resistance	R_g	V_{DS}=0V, V_{GS}=0V,f=1MHz	-	1.2	-	Ω
Diode forward voltage	V_{SD}[1]	I_{SD}=50A, V_{GS}=0V	-	-	1.3	V
Reverse recovery time	t_{rr}	I_{SD}=50A , dI_{SD}/dt=100A/μs	-	46	-	nS
Reverse recovery charge	Q_{rr}		-	86	-	nC
Input capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, f=1MHz	-	2946	-	pF
Output capacitance	C_{oss}		-	339	-	
Reverse transfer capacitance	C_{rss}		-	179	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=50V,I_{DS}=30A, R_G=6.8Ω,V_{GS}=10V	-	15	-	ns
Rise time	t_r		-	108	-	
Turn-off delay time	$t_{d(off)}$		-	51	-	
Fall time	t_f		-	59	-	
Total gate charge	Q_g	V_{DS}=50V,V_{GS}=10V I_{DS}=30A	-	60	-	nC
Gate-source charge	Q_{gs}		-	13.7	--	
Gate-drain charge	Q_{gd}		-	22.8	--	

Note : 1. Pulse test; pulse width≤300us duty cycle≤2%.

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

3. Package limitation current is 55A.

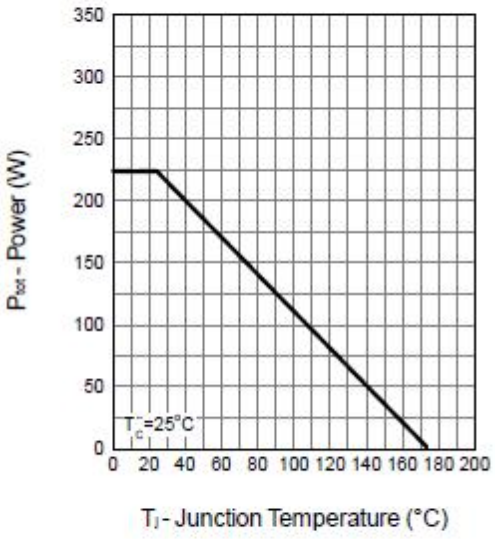
4. Repetitive rating, pulse width limited by max junction temperature.

5. Starting T_J=25ºC, L=0.5mH, I_{AS}=30A.

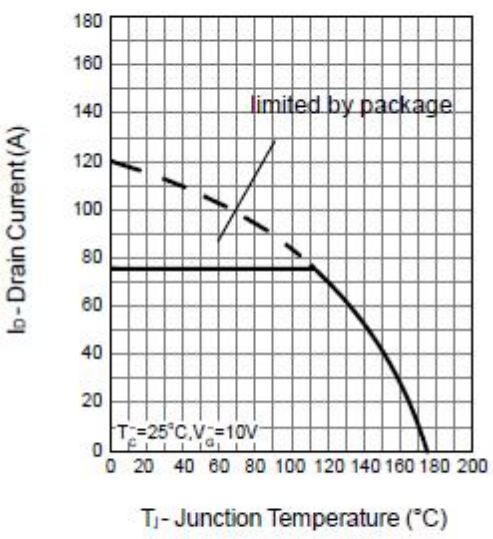
7. Test circuits and waveforms

Typical Operating Characteristics

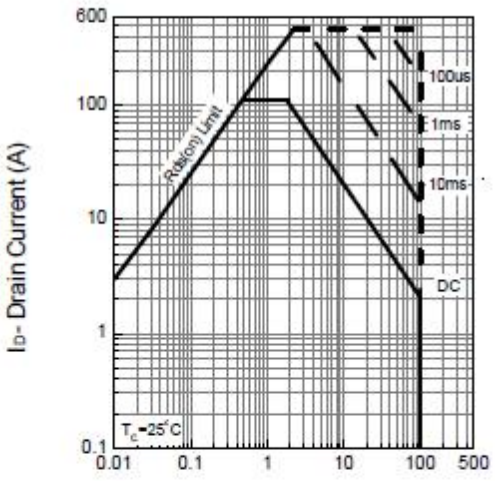
Power Dissipation



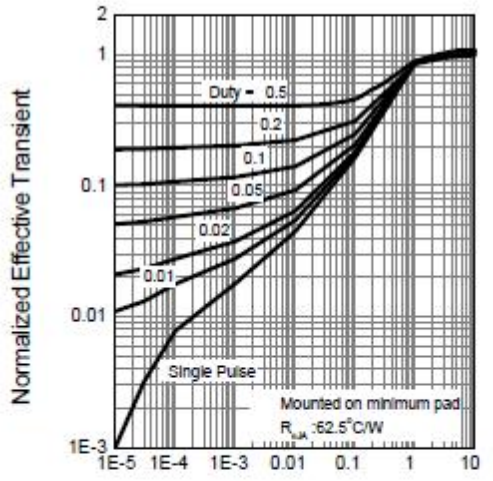
Drain Current



Safe Operation Area

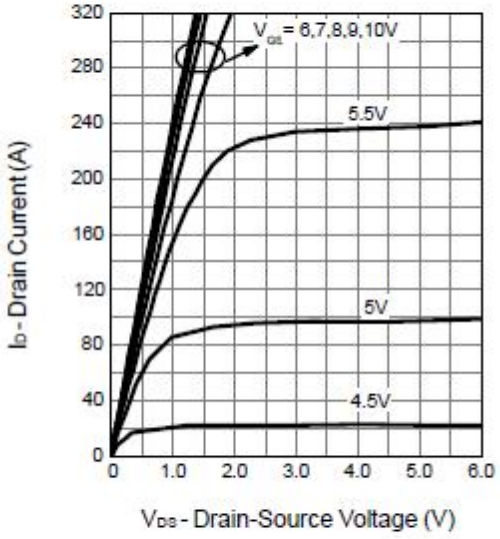


Thermal Transient Impedance

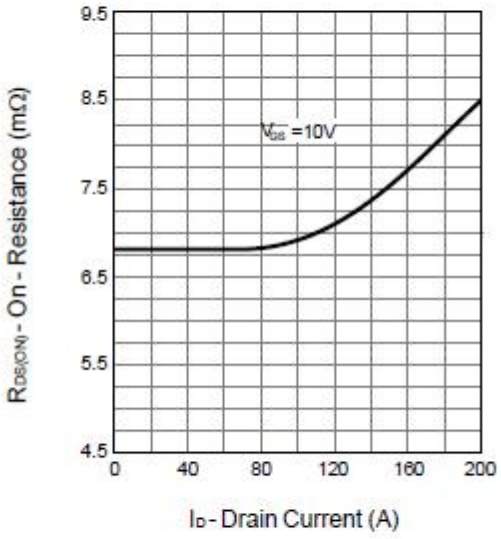


Typical Operating Characteristics (Cont.)

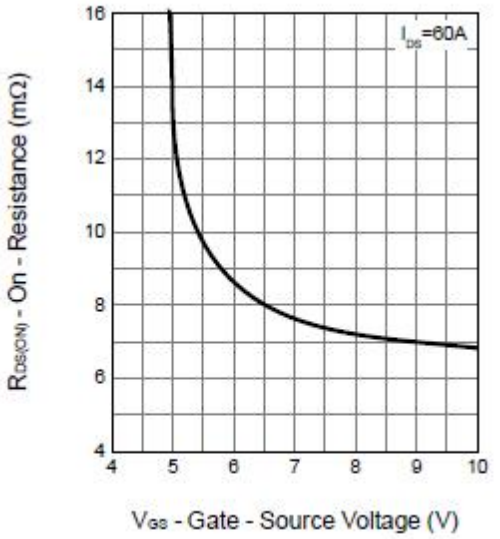
Output Characteristics



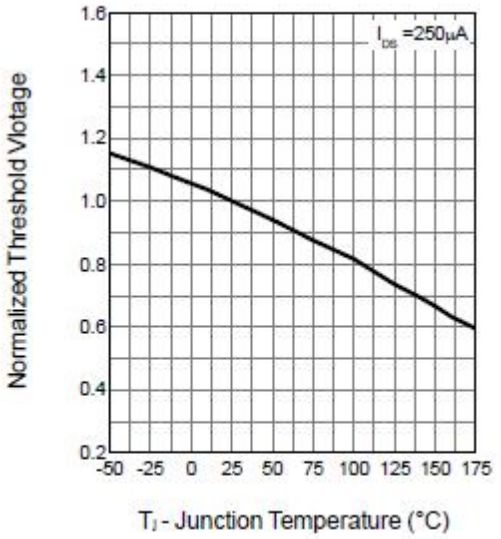
Drain-Source On Resistance



Drain-Source On Resistance

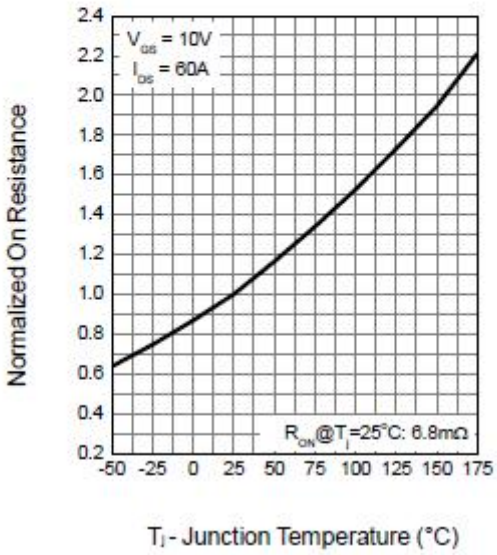


Gate Threshold Voltage

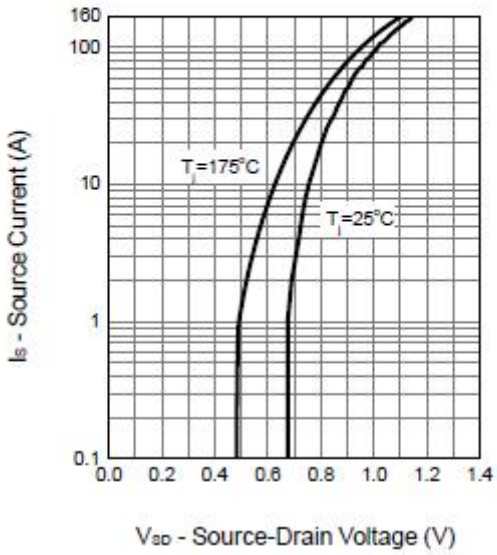


Typical Operating Characteristics (Cont.)

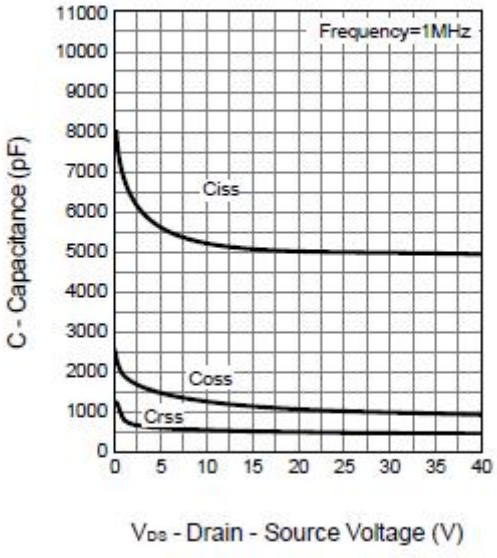
Drain-Source On Resistance



Source-Drain Diode Forward



Capacitance



Gate Charge