

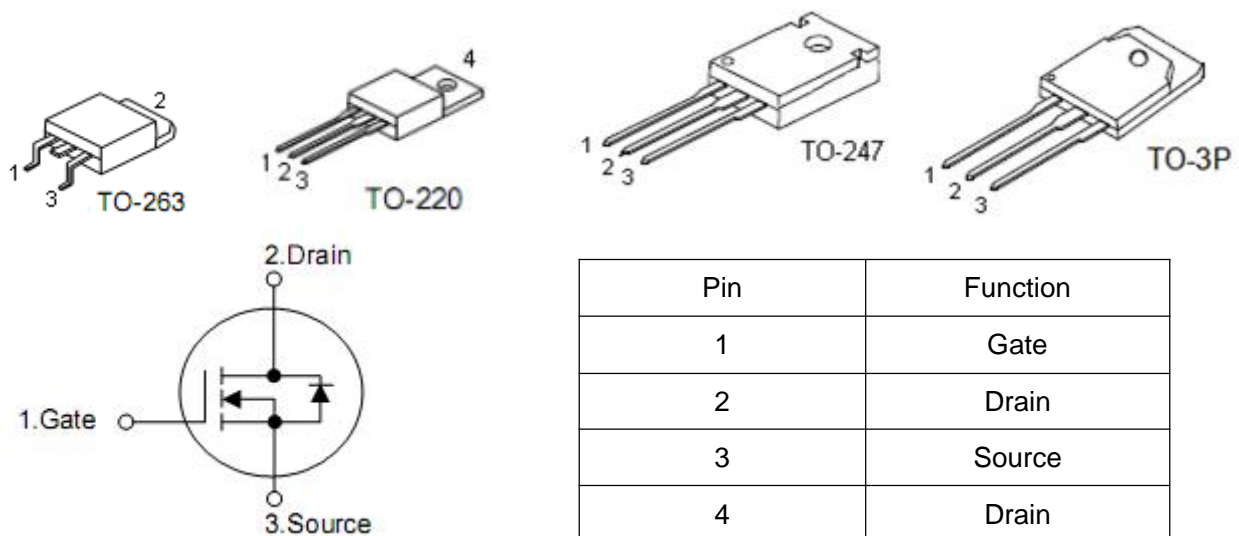
1. Features

- n $R_{DS(on)}=3.5m\Omega$ (typ.) @ $V_{GS}=10V$
- n 100% avalanche tested
- n Reliable and rugged
- n Lead free and green device available (RoHS Compliant)

2. Applications

- n Switching application
- n Power management for inverter systems
- n UPS

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
		TO-220/263	TO-247/3P	
Drain-source voltage	V_{DSS}	60		V
Gate-source voltage	V_{GSS}	± 25		V
Maximum junction temperature	T_J	175		$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to 175		$^{\circ}\text{C}$
Diode continuous forward current	$T_C=25^{\circ}\text{C}$ I_S	160		A
Continuous drain current	$T_C=25^{\circ}\text{C}$ I_D^3	160		A
	$T_C=100^{\circ}\text{C}$	105		A
Pulse drain current*	$T_C=25^{\circ}\text{C}$ I_{DM}^4	580		A
Avalanche energy, single pulsed	$L=0.5\text{mH}$ E_{AS}^5	400		mJ
Maximum power dissipation	$T_C=25^{\circ}\text{C}$ P_D	185	277	W
	$T_C=100^{\circ}\text{C}$	92.5	138.5	

5. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal resistance, Junction-ambient	$R_{\theta JA}$	62.5	$^{\circ}\text{C/W}$
Thermal resistance, Junction-case	$R_{\theta JC}$	0.81	$^{\circ}\text{C/W}$

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} =250μA	60	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =48V, V _{GS} =0V T _J =85°C	-	-	1	μA
			-	-	10	
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 _D =60A	-	3.5	4.5	mΩ
Gate resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	-	0.7	-	Ω
Diode forward voltage	V _{SD} ¹	I _{SD} =60A, V _{GS} =0V	-	0.8	1.2	V
Reverse recovery time ²	t _{rr}	I _F =60A, V _{DD} =50V di _{SD} /dt=100A/μs	-	30	-	nS
Reverse recovery charge ²	Q _{rr}		-	50	-	nC
Input capacitance ²	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	4376	-	pF
Output capacitance ²	C _{oss}		-	857	-	
Reverse transfer capacitance ²	C _{rss}		-	334	-	
Turn-on delay time ²	t _{d(on)}	V _{DD} =30V, I _{DS} =60A, R _G =25Ω, V _{GS} =10V	-	28	-	ns
Rise time ²	t _r		-	18	-	
Turn-off delay time ²	t _{d(off)}		-	42	-	
Fall time ²	t _f		-	54	-	
Total gate charge ²	Q _g	V _{DS} =48V, V _{GS} =10V I _{DS} =60A	-	130	-	nC
Gate-source charge ²	Q _{gs}		-	24	--	
Gate-drain charge ²	Q _{gd}		-	47	--	

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

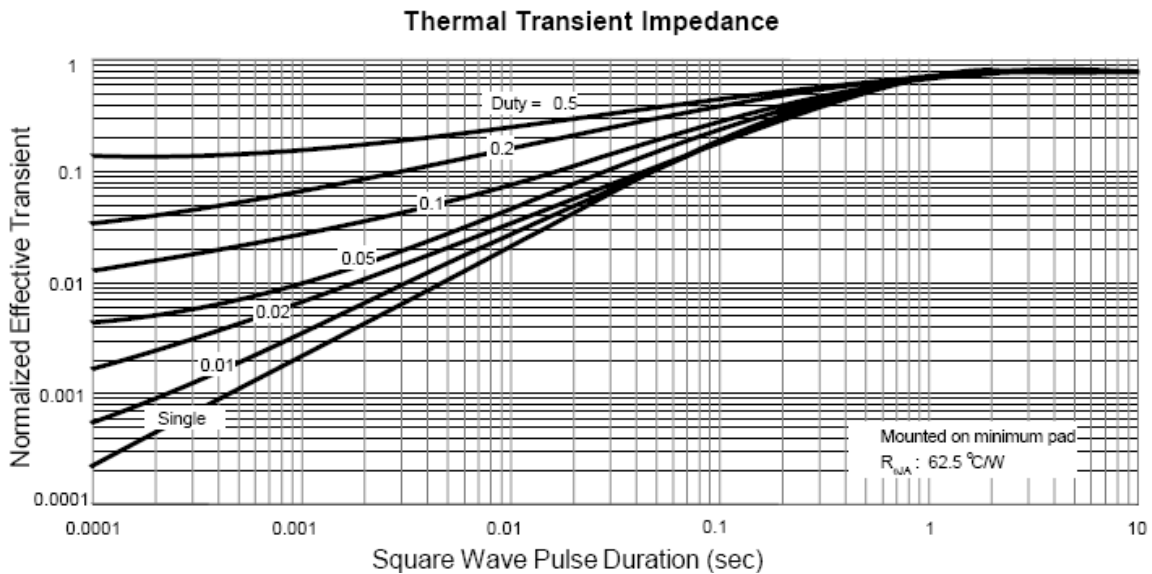
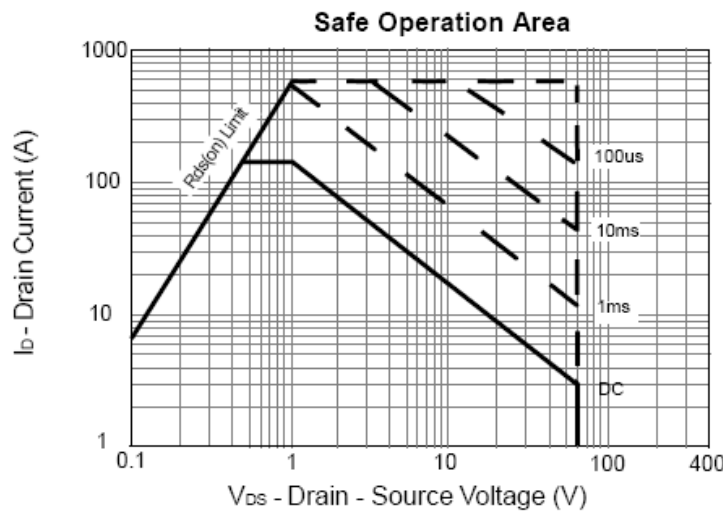
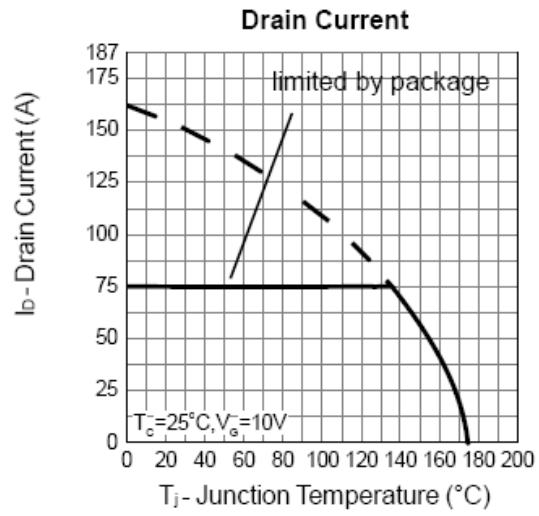
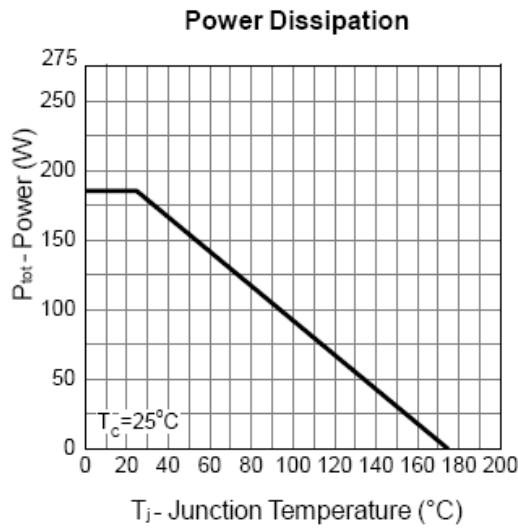
2. Guaranteed by design, not subject to production testing.

3. Package limitation current is 75A, Calculated continuous current based on maximum allowable junction temperature.

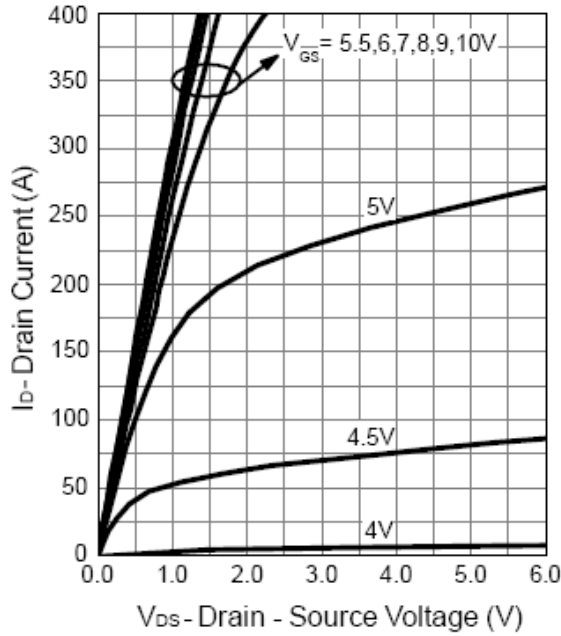
4. Repetitive rating, pulse width limited by junction temperature.

 5. Starting T_J=25°C, L=0.5mH.

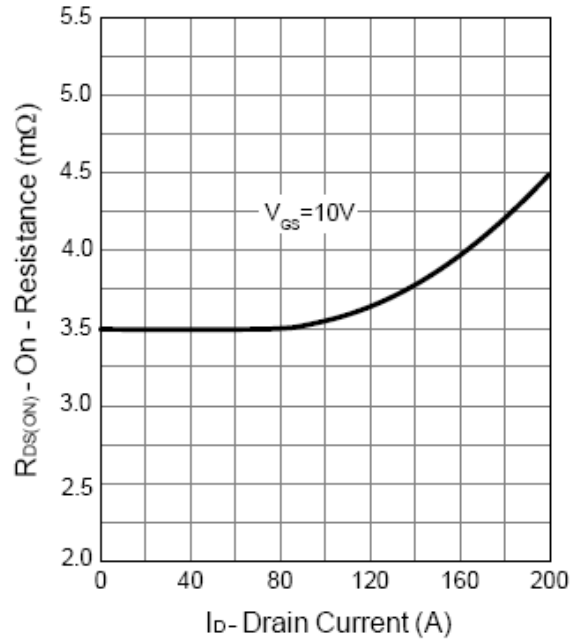
7. Test circuits and waveforms



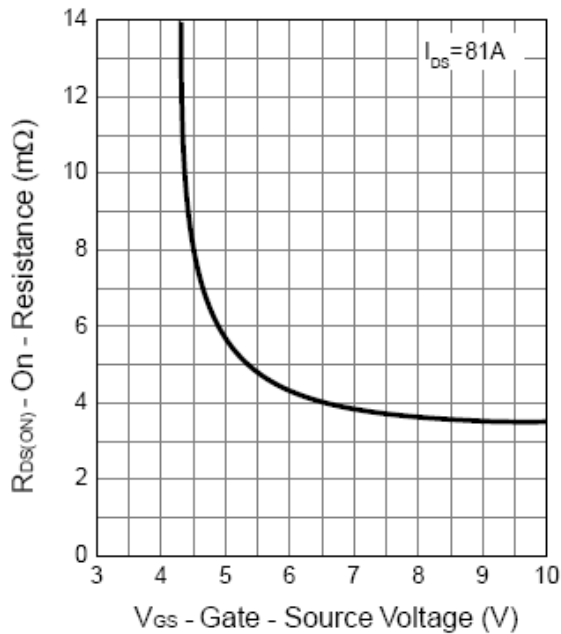
Output Characteristics



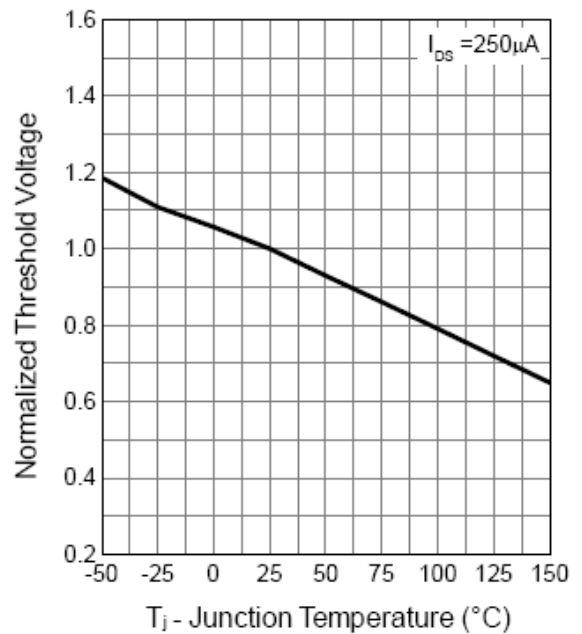
Drain-Source On Resistance



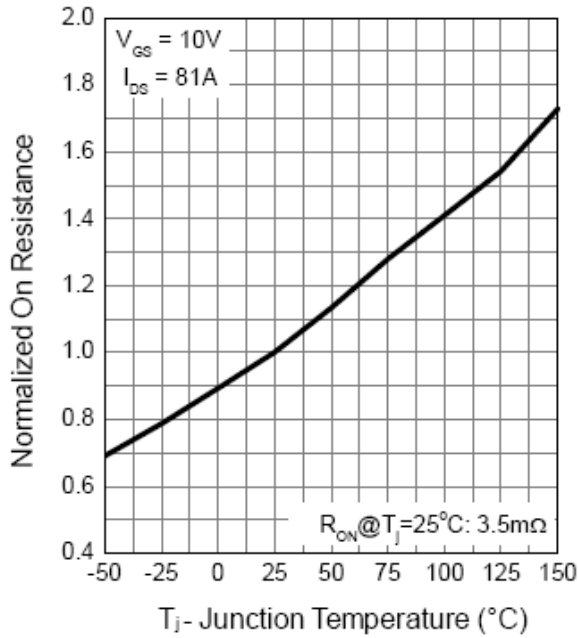
Gate-Source On Resistance



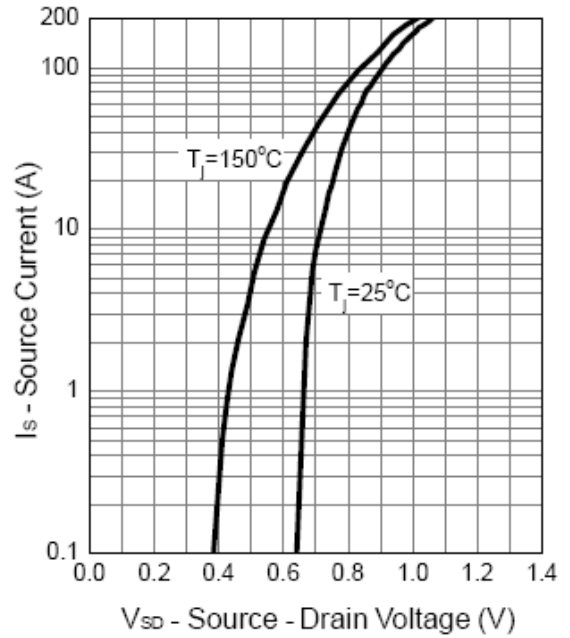
Gate Threshold Voltage



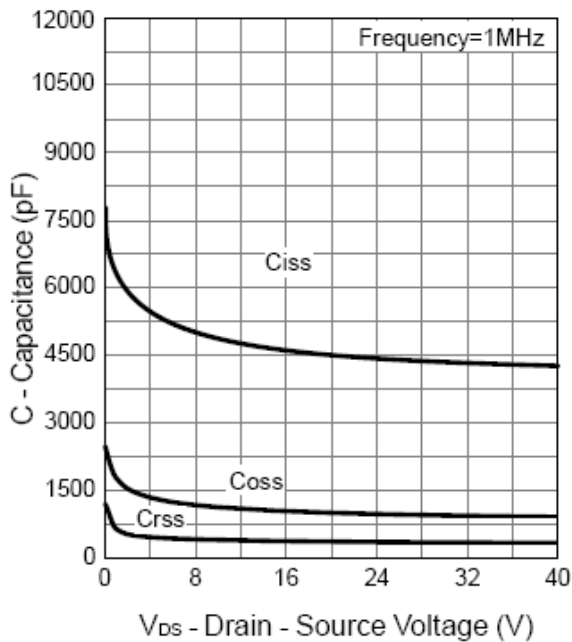
Drain-Source On Resistance



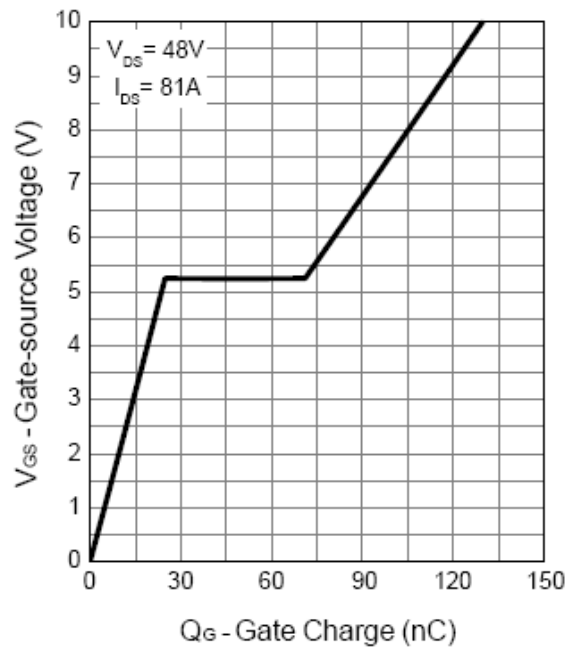
Source-Drain Diode Forward



Capacitance



Gate Charge



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