

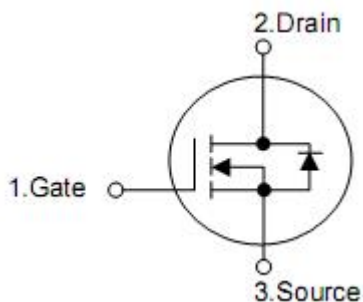
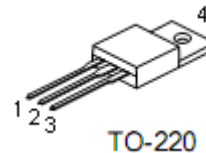
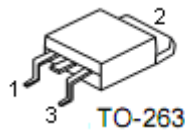
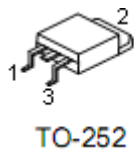
1. Features

- n $R_{DS(ON)}=0.7\Omega$ (typ) @ $V_{GS}=10V$
- n RoHS compliant
- n Low on resistance
- n Low gate charge
- n Peak current vs pulse width curve

2. Applications

- n Adaptor
- n TV main power
- n SMPS power supply
- n LCD panel power

3. Symbol



Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

4. Absolute maximum ratings

(T_C=25°C, unless otherwise specified)

Parameter	Symbol	Rating		Units
		TO-220 TO-263	TO-252	
Drain-source voltage	V _{DSS}	500		V
Continuous drain current	I _D	8.0		A
Continuous drain current T _C =100 °C		5.5		A
Pulsed drain current	I _{DM} ^{a1}	28		A
Power dissipation	P _D	160	100	W
Derating factor above 25°C		1.28	0.8	W/ °C
Gate-source voltage	V _{GS}	±20		V
Single pulse avalanche energy	E _{AS} ^{a2}	400		mJ
Avalanche energy, repetitive	E _{AR} ^{a1}	30		mJ
Avalanche current	I _{AR} ^{a1}	7.0		A
Peak diode recovery dv/dt	dv/dt ^{a3}	5.5		V/ns
Operating junction and storage temperature range	T _J , T _{STG}	150, -55 to 150		°C
Maximum temperature for soldering	T _L	300		°C

*Drain current limited by maximum junction temperature

Caution: Stresses greater than those listed in the "Absolute maximum ratings" table may cause permanent Damage to the device

5. Thermal characteristics

Parameter	Symbol	Rating	Unit	Test condition
Junction-case	R _{θJC}	1.04	°C/W	Drain lead soldered to water cooled heatsink, P _D adjusted for a peak junction temperature of +150 °C
Junction-ambient	R _{θJA}	100	°C/W	1 cubic foot chamber, free air

6. Electrical characteristics

(T_C=25°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	500	-	-	V
Bvdss temperature coefficient	ΔBV _{DSS} /ΔT _J	Reference 25°C I _D =250uA	-	0.74	-	V/°C
Drain-source leakage current	I _{DSS}	V _{DS} =500V, V _{GS} =0V T _A =25°C	-	-	25	μA
		V _{DS} =400V, V _{GS} =0V T _A =125°C	-	-	250	
Gate source breakdown voltage	V _{GSO}	I _{GS} =±1mA (open drain)	±20	-	-	V
Gate-source forward leakage	I _{GSS(F)}	V _{GS} =20V	-	-	10	uA
Gate-source reverse leakage	I _{GSS(R)}	V _{GS} =-20V	-	-	-10	
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =4A	-	0.7	0.9	Ω
Gate threshold voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D =250uA	2	3	4	V
Pulse width tp≤380μs, δ≤2%						
Forward transconductance	gfs	V _{DS} =15V, I _D =3A	-	8.5	-	S
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V f=1MHz	-	960	-	pF
Output capacitance	C _{oss}		-	110	-	
Reverse transfer capacitance	C _{rss}		-	10	-	
Turn-on delay time	t _{d(on)}	V _{DD} =250V, I _D =8A, R _G =12Ω, V _{GS} =10V	-	11	-	ns
Rise time	t _r		-	17	-	
Turn-off delay time	t _{d(off)}		-	46	-	
Fall time	t _f		-	22	-	
Total gate charge	Q _g	V _{DD} =250V, I _D =8A, V _{GS} =10V	-	24	-	nC
Gate-source charge	Q _{gs}		-	4.0	-	
Gate-drain charge	Q _{gd}		-	10	-	
Continuous source current (body biode)	I _S		-	-	8	A
Maximum pulsed current (body biode)	I _{SM}		-	-	32	
Diode forward voltage	V _{SD}	I _S =8A, V _{GS} =0V	-	-	1.5	V
Reverse recovery time	t _{rr}	I _S =8A, V _{GS} =0V di _F /dt=100A/μs T _J =25°C	-	175	-	ns
Reverse recovery charge	Q _{rr}		-	0.75	-	nC
Reverse recovery current	I _{RRM}		-	8.57	-	A
Pulse width tp≤380μs, δ≤2%						

Note:a1.Repetitive rating;pulse width limited by maximum junction temperature

a2.L=10.0mH,Start T_J=25°C.

a3. I_{SD}=8A di/dt≤100A/μs, V_{DD}≤ BV_{DS}, Start T_J=25°C.

7. Typical operating characteristics

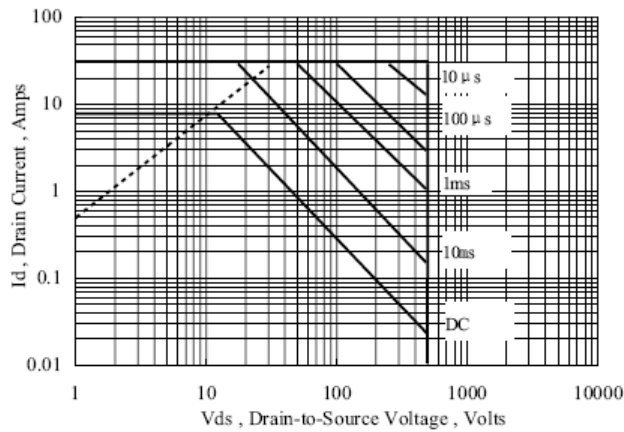


Figure 1 Maximum Forward Bias Safe Operating Area

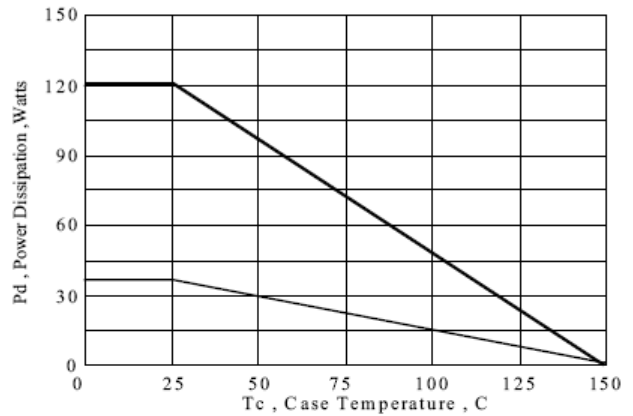


Figure 2 Maximum Power Dissipation vs Case Temperature

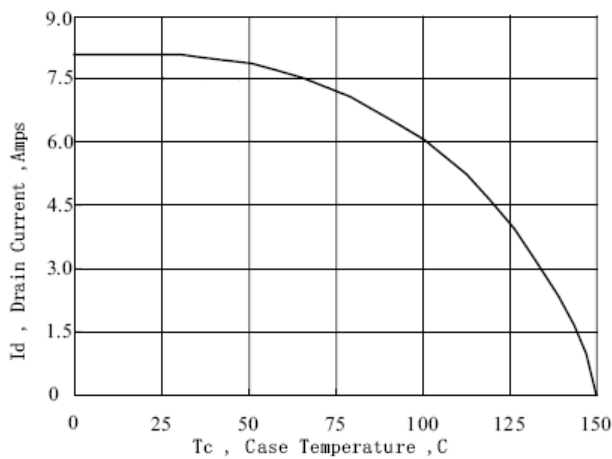


Figure 3 Maximum Continuous Drain Current vs Case Temperature

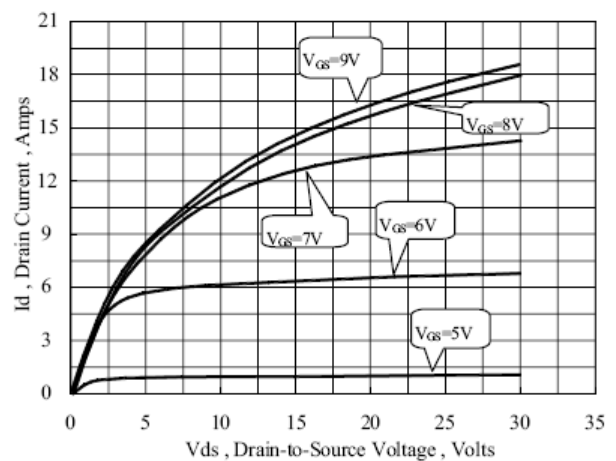


Figure 4 Typical Output Characteristics

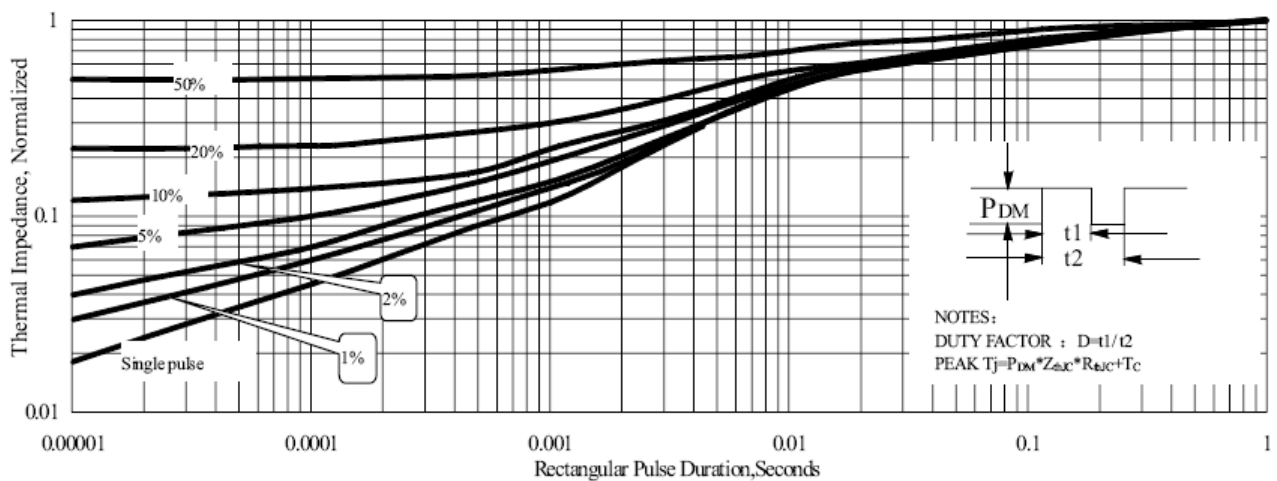


Figure 5 Maximum Effective Thermal Impedance, Junction to Case

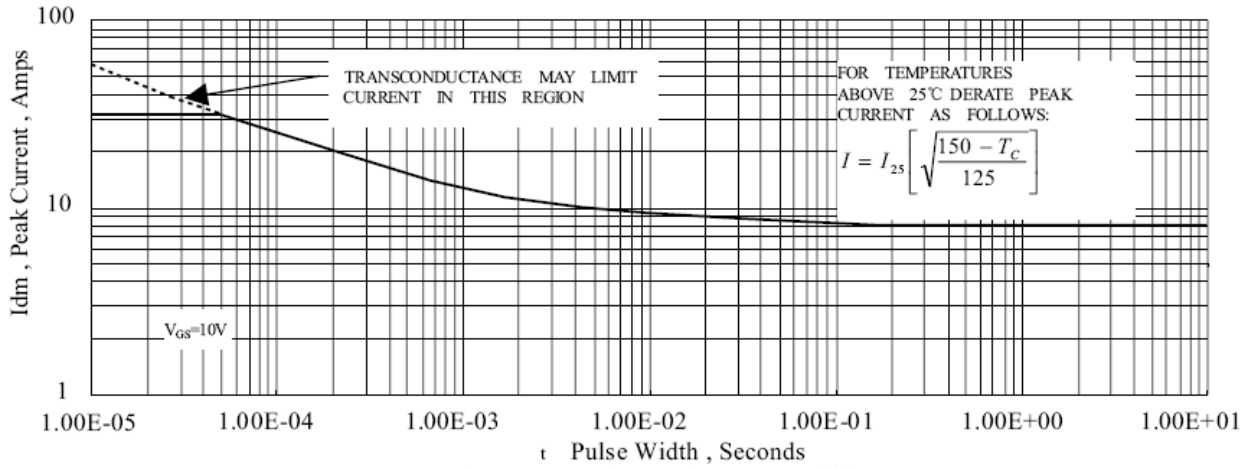


Figure 6 Maximum Peak Current Capability

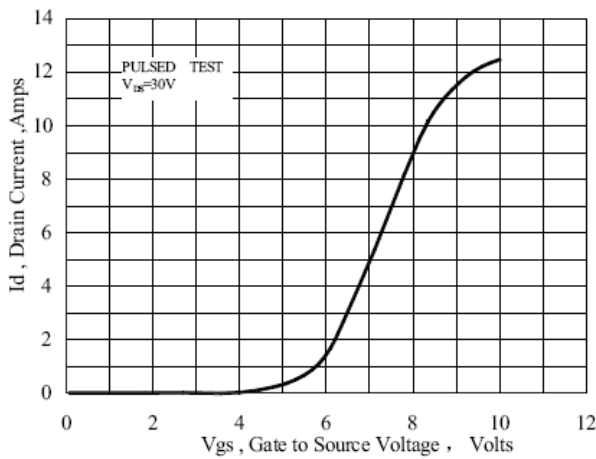


Figure 7 Typical Transfer Characteristics

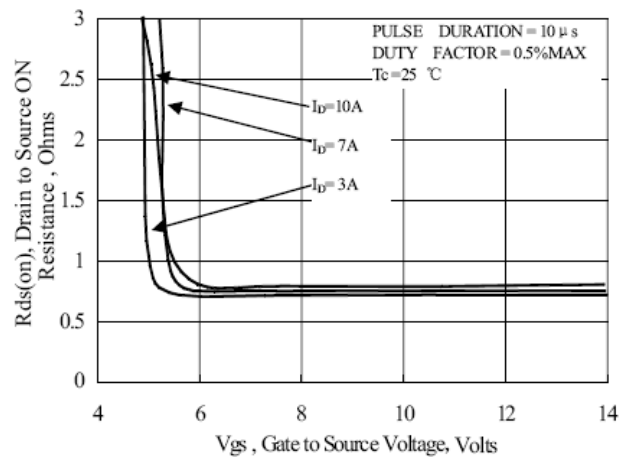


Figure 8 Typical Drain to Source ON Resistance vs Gate Voltage and Drain Current

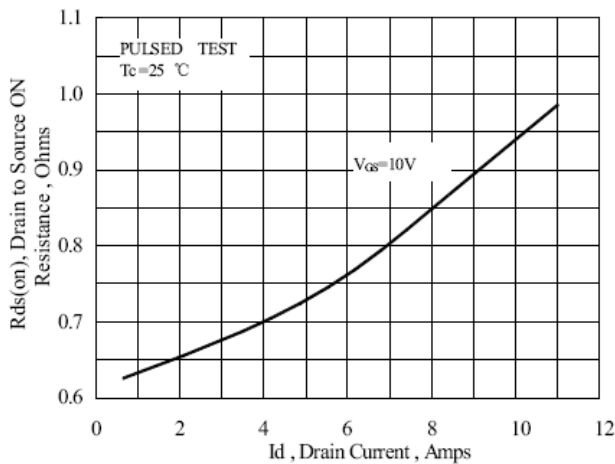


Figure 9 Typical Drain to Source ON Resistance vs Drain Current

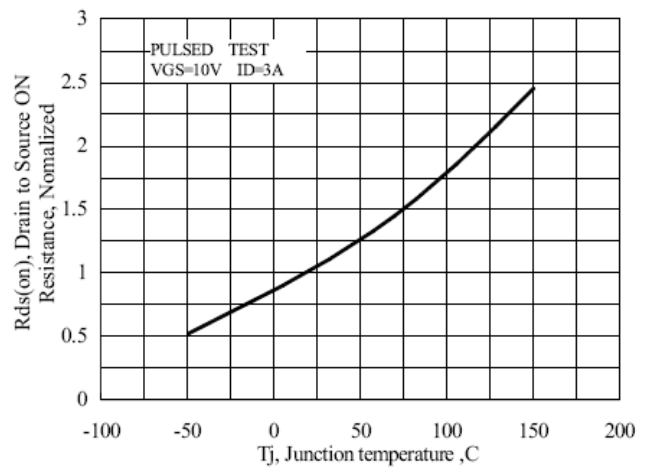


Figure 10 Typical Drain to Source ON Resistance vs Junction Temperature

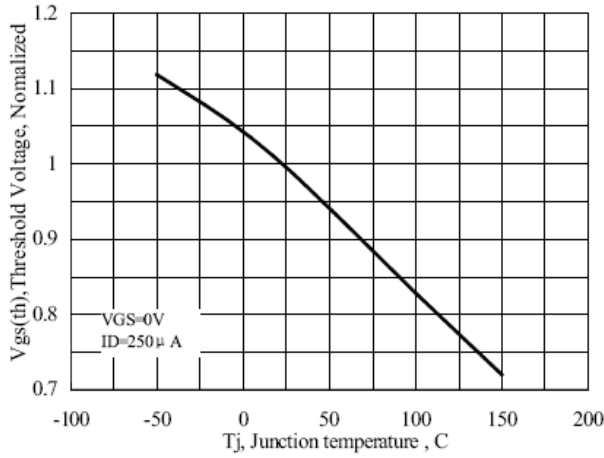


Figure 11 Typical Theshold Voltage vs Junction Temperature

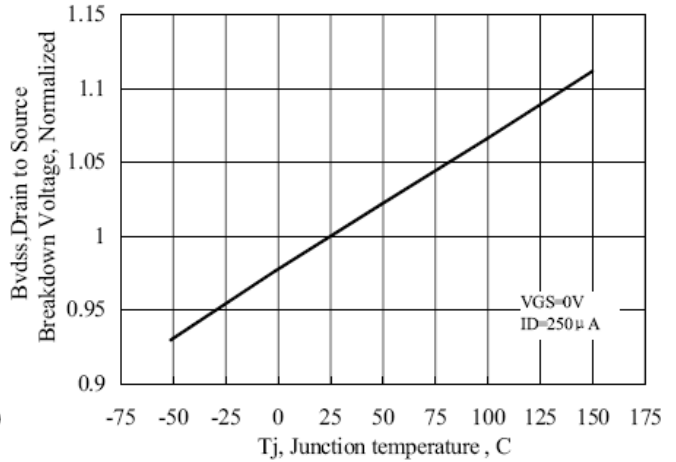


Figure 12 Typical Breakdown Voltage vs Junction Temperature

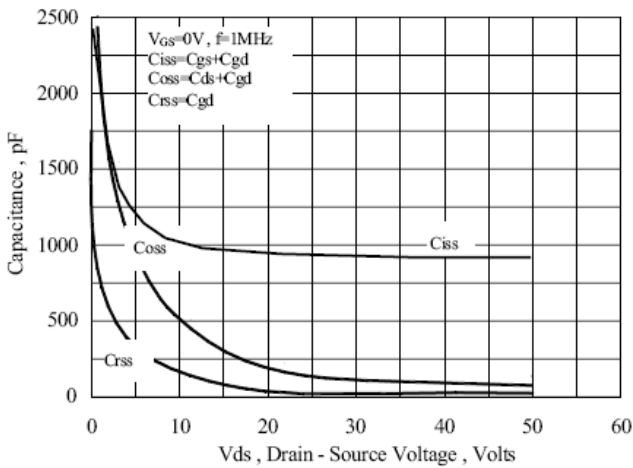


Figure 13 Typical Capacitance vs Drain to Source Voltage

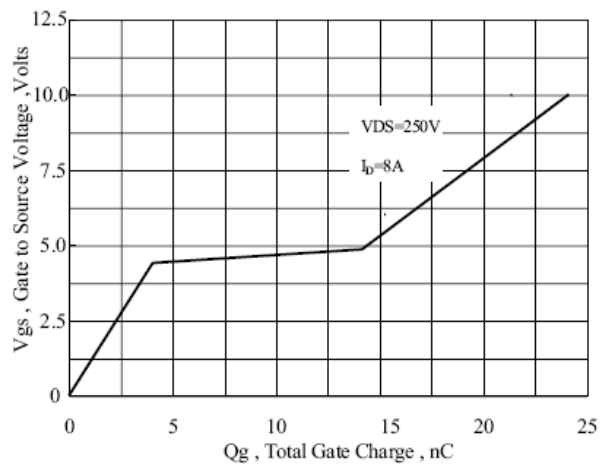


Figure 14 Typical Gate Charge vs Gate to Source Voltage

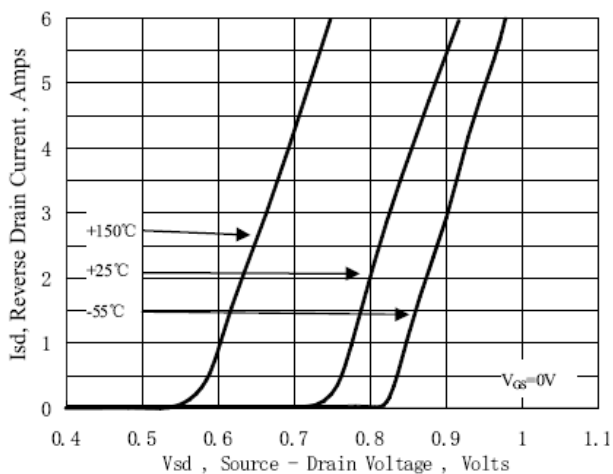


Figure 15 Typical Body Diode Transfer Characteristics

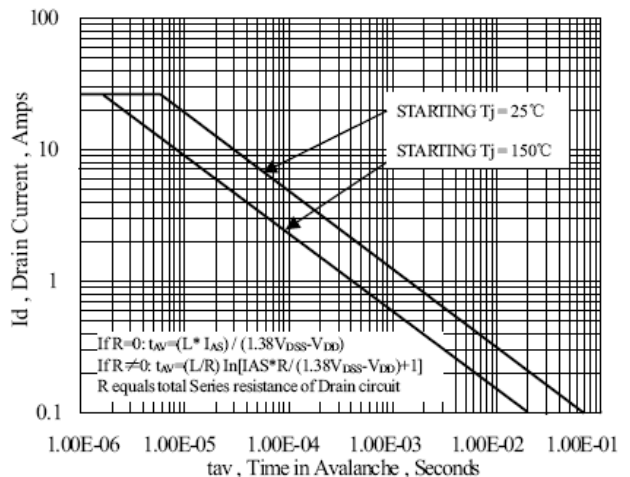


Figure 16 Unclamped Inductive Switching Capability