

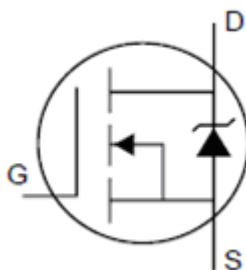
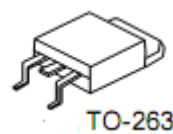
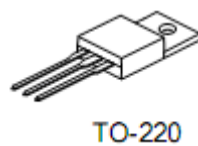
1. Description

This power MOSFET is designed using trench layout-based process. This technology improves the performances compared with standard parts from various sources. All of these power MOSFETs are designed for applications in switching regulators, switching convertors, motor and relay drivers, and drivers for high power bipolar switching transistors demanding high speed and low gate drive power.

2. Applications

- $V_{DSS}=100V, R_{DS(on)}=18m\Omega, I_D=59A$
- Ultra low on-resistance
- Dynamic dv/dt rating
- 175°C operating temperature
- Fast switching
- Fully avalanche rated

3. Pin configuration



Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

4. Absolute maximum ratings

Parameter	Symbol	Max.	Units
Continuous drain current, $V_{GS} @ 10V$	$I_D @ T_C = 25^\circ C$	59	A
Continuous drain current, $V_{GS} @ 10V$	$I_D @ T_C = 100^\circ C$	42	
Pulsed drain current ¹⁾	I_{DM}	240	
Maximum power dissipation	$P_D @ T_C = 25^\circ C$	160	W
Gate-to-source voltage	V_{GS}	± 20	V
Single pulse avalanche energy (thermally limited) ($T_j=25^\circ C, L=0.27mH, R_G=25\Omega, I_{AS}=35A, V_{GS}=10V$)	E_{as}	170	mJ
Operating junction and storage temperature range	T_j	-55 to +175	°C
Soldering temperature, for 10 seconds		300	

5. Thermal resistance

Parameter	Symbol	Typ.	Max.	Units
Junction-to-case	$R_{\theta JC}$	-	0.92	°C/W
Case-to-sink, flat, greased surface	$R_{\theta CS}$	0.50	-	
Junction-to-ambient	$R_{\theta JA}$	-	62	

6. Electrical characteristics

(T_J=25°C, unless otherwise notes)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Drain-to-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	100	-	-	V
Breakdown voltage temp. coefficient	ΔV _{(BR)DSS} /ΔT _J	Reference to 25°C, I _D =1mA	-	0.10	-	V/°C
Static drain-to-source on-resistance ²⁾	R _{DS(ON)}	V _{GS} =10V, I _D =35A	-	-	18	mΩ
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0	-	4.0	V
Forward transconductance ²⁾	g _(fs)	V _{DS} =50V, I _D =35A	35	-	-	S
Drain-to-source leakage current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	-	-	20	μA
		³⁾ V _{DS} =100V, V _{GS} =0V	-	-	250	
Gate-to-source forward leakage	I _{GSS}	V _{GS} =20V	-	-	+200	nA
Gate-source reverse leakage		V _{GS} =-20V	-	-	-200	
Total gate charge ²⁾	Q _g	I _D =35A V _{DS} =80V V _{GS} =10V	-	87	120	nC
Gate-to-source charge ²⁾	Q _{gs}		-	21	28	
Gate-to-drain charge ²⁾	Q _{gd}		-	30	40	
Turn-on delay time ²⁾	t _{d(on)}	V _{DD} =50V I _D =35A R _G =6.8Ω V _{GS} =10V,	-	18	-	ns
Rise time ²⁾	t _r		-	86	-	
Turn-off delay time ²⁾	t _{d(off)}		-	47	-	
Fall time ²⁾	t _f		-	60	-	
Input capacitance	C _{ISS}	V _{GS} =0V V _{DS} =25V f=1.0MHz	-	2990	-	pF
Output capacitance	C _{OSS}		-	3000	-	
Reverse transfer capacitance	C _{RSS}		-	160	-	
Output capacitance	C _{OSS}	V _{GS} =0V, V _{DS} =1V, f=1.0MHz	-	1180	-	
Output capacitance	C _{OSS}	V _{GS} =0V, V _{DS} =80V, f=1.0MHz	-	190	-	
Effective output capacitance	C _{OSS eff}	V _{GS} =0V, V _{DS} =0V to 80V	-	300	-	

7. Source-drain ratings and characteristics

($T_J=25^{\circ}\text{C}$, unless otherwise notes)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Diode forward voltage ²⁾	V_{SD}	$V_{GS}=0\text{V}, I_S=35\text{A}$	-	-	1.3	V
Continuous source current (body diode)	I_S	$V_{GS}=0\text{V}$	-	-	59	A
Pulsed source current (body diode)	I_{SM}	repetitive, pulse width limited by T_{JM}	-	-	240	
Reverse recovery time ²⁾	t_{rr}	$I_F=35\text{A}, V_{DD}=25\text{V}$ $di/dt=100\text{A}/\mu\text{s}$	-	56	75	ns
Reverse recovery charge ²⁾	Q_{rr}		-	106	160	nC

Notes:

1. Repetitive rating; pulse width limited by max. junction temperature.
2. Pulse test, $t \leq 300\mu\text{s}$; duty cycle $\leq 2\%$.
3. $T_J=+125^{\circ}\text{C}$.