

N-CHANNEL SILICON POWER MOS-FET

■ Features

- High speed switching
- Low on-resistance
- No secondary breakdown
- Low driving power
- Avalanche-proof

■ Applications

Switching regulators
UPS (Uninterruptible Power Supply)
DC-DC converters

■ Maximum ratings and characteristicAbsolute maximum ratings

● (Tc=25°C unless otherwise specified)

Item	Symbol	Rating	Unit
Drain-source voltage	V _{DS}	500	V
Continuous drain current	I _D	±27	A
Pulsed drain current	I _D (puls)	±108	A
Gate-source voltage	V _{GS}	±30	V
Repetitive or non-repetitive	I _{AR} *2	27	A
Maximum Avalanche Energy	E _{AV} *1	914	mJ
Max. power dissipation	P _D	400	W
Operating and storage temperature range	T _{ch} T _{stg}	+150 -55 to +150	°C

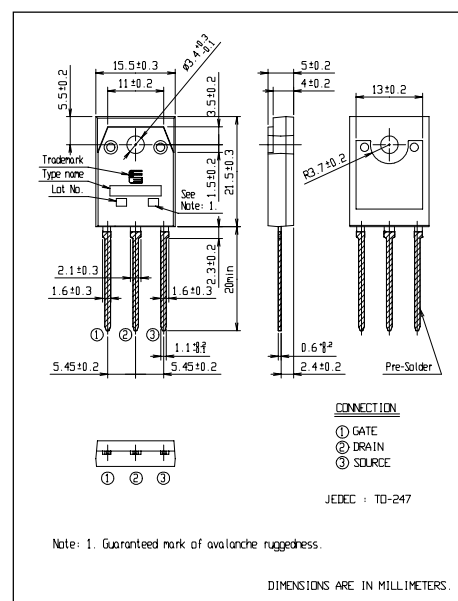
*1 $L=2.30\text{mH}$, $V_{cc}=50\text{V}$ *2 $T_{ch} \leq 150^\circ\text{C}$

● **Electrical characteristics (T_c =25°C unless otherwise specified)**

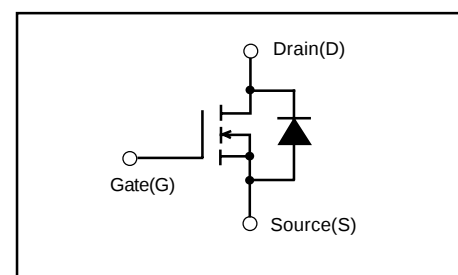
Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V(BR)DSS	Id=1mA VGS=0V		500			V
Gate threshold voltage	VGS(th)	Id=1mA	VDS=VGS	2.5	3.0	3.5	V
Zero gate voltage drain current	IDSS	VDS=500V	Tch=25°C		10	500	μA
		VGS=0V	Tch=125°C		0.2	1.0	mA
Gate-source leakage current	IGSS	VGS=±30V VDS=0V			10	100	nA
Drain-source on-state resistance	RDS(on)	Id=13.5A VGS=10V			0.16	0.2	Ω
Forward transconductance	gfs	Id=13.5A VDS=25V		11	22		S
Input capacitance	Ciss	VDS=25V			4300	6450	pF
Output capacitance	Coss	VGS=0V			630	945	
Reverse transfer capacitance	Crss	f=1MHz			285	430	
Turn-on time ton	td(on)	Vcc=300V Id=27A			40	60	ns
	tr	VGS=10V			145	220	
Turn-off time toff	td(off)	RGS=10 Ω			315	475	
	tr				150	225	
Total gate charge	QG	Vcc=250V			198	300	nC
Gate-Source charge	QGS	Id=27A			38	60	
Gate-Drain charge	QGD	VGS=10V			81	125	
Avalanche capability	I _{AV}	L=2.30mH Tch=25°C		27			A
Diode forward on-voltage	VSD	If=2xIDR VGS=0V Tch=25°C			1.2	1.8	V
Reverse recovery time	trr	If=IDR VGS=0V			660		ns
Reverse recovery charge	Qrr	-di/dt=100A/μs Tch=25°C			15.0		μC

● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			0.3125	°C/W
	R _{th(ch-a)}	channel to ambient			50.0	°C/W



■ Equivalent circuit schematic



Characteristics

