

## 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 characteristic Absolute maximum ratings

● (T<sub>c</sub>=25°C unless otherwise specified)

Item	Symbol	Rating	Unit
Drain-source voltage	V <sub>DS</sub>	60	V
Continuous drain current	I <sub>D</sub>	±45	A
Pulsed drain current	I <sub>D(puls)</sub>	±180	A
Gate-source voltage	V <sub>GS</sub>	±30	V
Maximum Avalanche Energy	E <sub>AV</sub> *1	461.9	mJ
Max. power dissipation	P <sub>D</sub>	60	W
Operating and storage temperature range	T <sub>ch</sub> T <sub>stg</sub>	+150 -55 to +150	°C

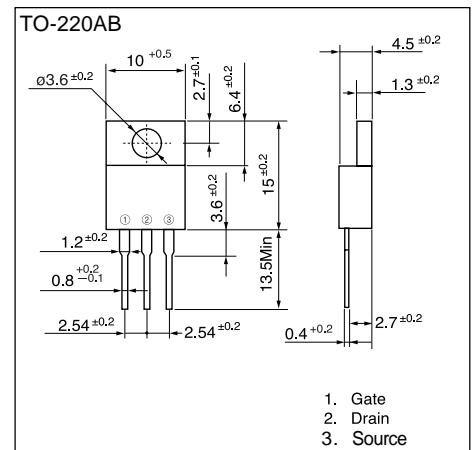
\*1 L=0.304mH, V<sub>cc</sub>=24V

### ● Electrical characteristics (T<sub>c</sub> =25°C unless otherwise specified)

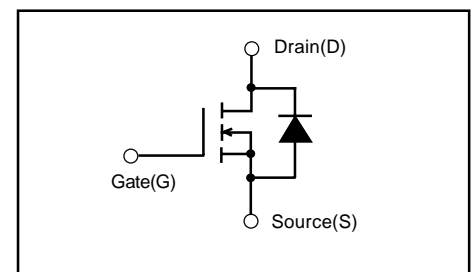
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	BV <sub>DSS</sub>	I <sub>D</sub> =1mA V <sub>GS</sub> =0V	60			V
Gate threshold voltage	V <sub>GS(th)</sub>	I <sub>D</sub> =10mA V <sub>DS</sub> =V <sub>GS</sub>	2.5	3.0	3.5	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =60V V <sub>GS</sub> =0V	T <sub>ch</sub> =25°C	10	500	μA
			T <sub>ch</sub> =125°C	0.2	1.0	mA
Gate-source leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±30V V <sub>DS</sub> =0V		10	100	nA
Drain-source on-state resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =22.5A V <sub>GS</sub> =10V		12.0	14.5	mΩ
Forward transconductance	g <sub>fs</sub>	I <sub>D</sub> =22.5A V <sub>DS</sub> =25V	10.0	25.0		S
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V		2300	3450	pF
Output capacitance	C <sub>oss</sub>	V <sub>GS</sub> =0V		910	1370	pF
Reverse transfer capacitance	C <sub>rss</sub>	f=1MHz		260	390	pF
Turn-on time t <sub>on</sub>	t <sub>d(on)</sub> t <sub>r</sub>	V <sub>CC</sub> =30V I <sub>D</sub> =45A V <sub>GS</sub> =10V		18	30	ns
				55	80	
Turn-off time t <sub>off</sub>	t <sub>d(off)</sub> t <sub>f</sub>	R <sub>GS</sub> =10 Ω		70	120	
				48	80	
Avalanche capability	I <sub>AV</sub>	L=100 μH T <sub>ch</sub> =25°C	45			A
Diode forward on-voltage	V <sub>SD</sub>	I <sub>F</sub> =45A V <sub>GS</sub> =0V T <sub>ch</sub> =25°C		1.0	1.5	V
Reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> =45A V <sub>GS</sub> =0V		60		ns
Reverse recovery charge	Q <sub>rr</sub>	-di/dt=100A/μs T <sub>ch</sub> =25°C		0.11		μC

### ● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R <sub>th(ch-c)</sub>	channel to case			2.08	°C/W
	R <sub>th(ch-a)</sub>	channel to ambient			75.0	°C/W



### ■ Equivalent circuit schematic



Characteristics

