

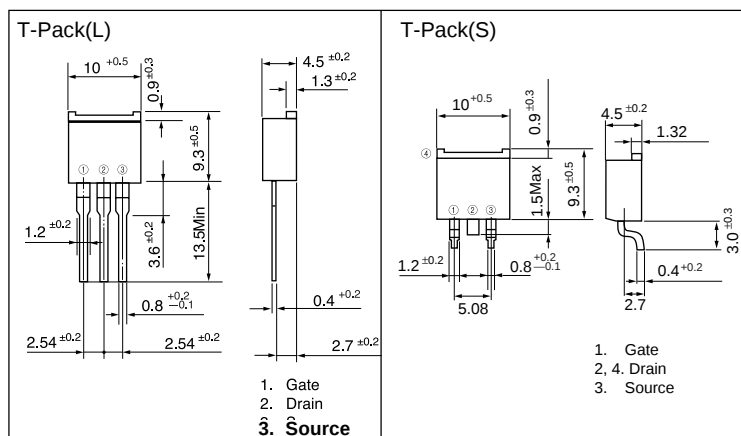
N-CHANNEL SILICON POWER MOS-FET

■ 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



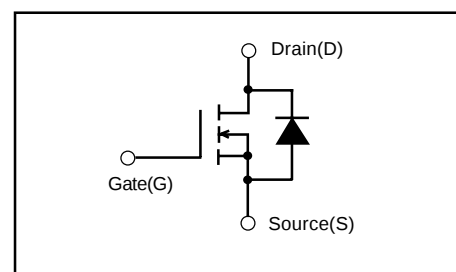
■ Maximum ratings and characteristic Absolute maximum ratings

● (Tc=25°C unless otherwise specified)

Item	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	60	V
Continuous drain current	I_D	±45	A
Pulsed drain current	$I_{D(puls)}$	±180	A
Gate-source voltage	V_{GS}	±30	V
Maximum Avalanche Energy	E_{AV}^{*1}	461.9	mJ
Max. power dissipation	P_D	60	W
Operating and storage temperature range	T_{ch} T_{stg}	+150 -55 to +150	°C

*1 L=0.304mH, $V_{CC}=24V$

■ Equivalent circuit schematic



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

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	BV_{DSS}	$I_D=1mA$ $V_{GS}=0V$	60			V
Gate threshold voltage	$V_{GS(th)}$	$I_D=10mA$ $V_{DS}=V_{GS}$	2.5	3.0	3.5	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=60V$ $V_{GS}=0V$ $T_{ch}=25°C$		10	500	μA
		$T_{ch}=125°C$		0.2	1.0	mA
Gate-source leakage current	I_{GSS}	$V_{GS}=±30V$ $V_{DS}=0V$		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D=22.5A$ $V_{GS}=10V$		12.0	14.5	mΩ
Forward transconductance	g_{fs}	$I_D=22.5A$ $V_{DS}=25V$	10.0	25.0		S
Input capacitance	C_{iss}	$V_{DS}=25V$		2300	3450	pF
Output capacitance	C_{oss}	$V_{GS}=0V$		910	1370	pF
Reverse transfer capacitance	C_{rss}	$f=1MHz$		260	390	pF
Turn-on time t_{on}	$t_{d(on)}$	$V_{CC}=30V$ $I_D=45A$		18	30	ns
	t_r	$V_{GS}=10V$		55	80	ns
Turn-off time t_{off}	$t_{d(off)}$	$R_{GS}=10Ω$		70	120	ns
	t_f			48	80	ns
Avalanche capability	I_{AV}	$L=100μH$ $T_{ch}=25°C$	45			A
Diode forward on-voltage	V_{SD}	$I_F=45A$ $V_{GS}=0V$ $T_{ch}=25°C$		1.0	1.5	V
Reverse recovery time	t_{rr}	$I_F=45A$ $V_{GS}=0V$		60		ns
Reverse recovery charge	Q_{rr}	$-di/dt=100A/μs$ $T_{ch}=25°C$		0.11		μC

● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			2.08	°C/W
	$R_{th(ch-a)}$	channel to ambient			125.0	°C/W

Characteristics

