

PUB4702

Silicon N-Channel Power F-MOS FET

■ Features

- Avalanche energy capacity guaranteed
- High-speed switching
- Low ON-resistance
- No secondary breakdown
- Low-voltage drive
- Incorporating built-in zener diodes

■ Applications

- Contactless relay
- Diving circuit for a solenoid
- Driving circuit for a motor
- Control equipment
- Switching power supply

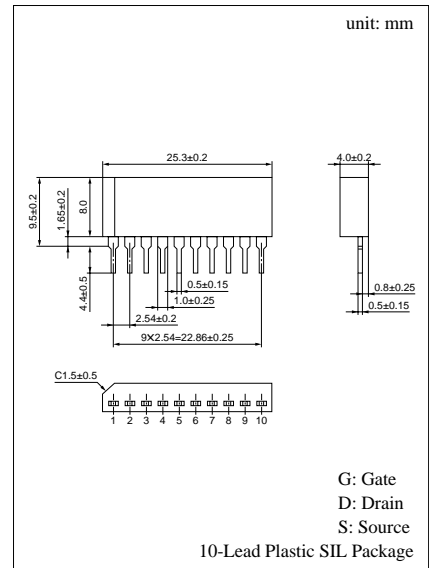
■ Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$)

Parameter	Symbol	Rated	Unit
Drain to Source breakdown voltage	V_{DSS}	35 ± 10	V
Gate to Source voltage	V_{GSS}	± 15	V
Drain current	DC	I_D	± 1 A
	Pulse	I_{DP}	± 2 A
Avalanche energy capacity	EAS*	2.5	mJ
Allowable power dissipation	$T_C = 25^\circ\text{C}$	P_D	15 W
	$T_a = 25^\circ\text{C}$		3.5 W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

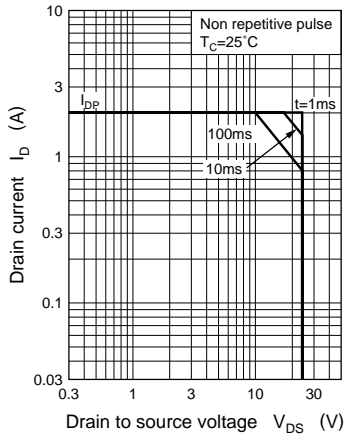
* $L = 5\text{mH}$, $I_L = 1\text{A}$, 1 pulse

■ Electrical Characteristics ($T_C = 25^\circ\text{C}$)

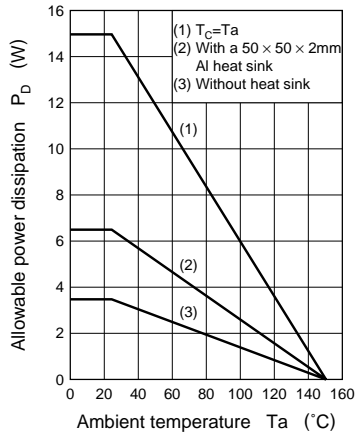
Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source cut-off current	I_{DSS}	$V_{DS} = 25\text{V}$, $V_{GS} = 0$			10	μA
Gate to Source leakage current	I_{GSS}	$V_{GS} = \pm 15\text{V}$, $V_{DS} = 0$			± 10	μA
Drain to Source breakdown voltage	V_{DSS}	$I_D = 1\text{mA}$, $V_{GS} = 0$	25		45	V
Gate threshold voltage	V_{th}	$V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$	1		2.5	V
Drain to Source ON-resistance	$R_{DS(on)1}$	$V_{GS} = 10\text{V}$, $I_D = 0.5\text{A}$		220	380	$\text{m}\Omega$
	$R_{DS(on)2}$	$V_{GS} = 4\text{V}$, $I_D = 0.5\text{A}$		390	680	$\text{m}\Omega$
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10\text{V}$, $I_D = 0.5\text{A}$	0.6	1		S
Diode forward voltage	V_{DSF}	$I_{DR} = 1\text{A}$, $V_{GS} = 0$			-1.5	V
Input capacitance (Common Source)	C_{iss}	$V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$		135		pF
Output capacitance (Common Source)	C_{oss}			85		pF
Reverse transfer capacitance (Common Source)	C_{rss}			50		pF
Turn-on time	t_{on}	$V_{GS} = 10\text{V}$, $I_D = 0.5\text{A}$		120		ns
Fall time	t_f			390		ns
Turn-off time (delay time)	$t_{d(off)}$	$V_{DD} = 25\text{V}$, $R_L = 50\Omega$		800		ns



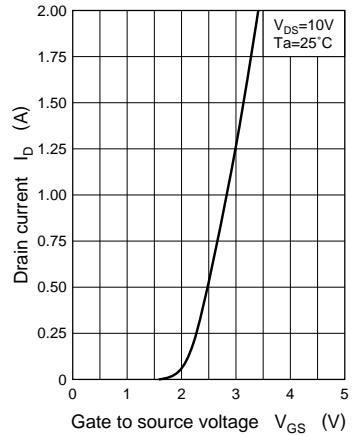
Area of safe operation (ASO)



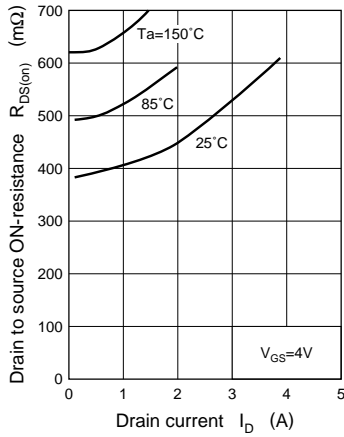
$P_D - T_a$



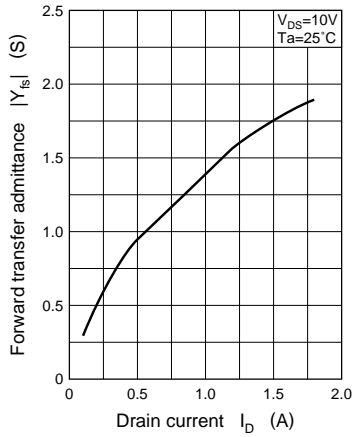
$I_D - V_{GS}$



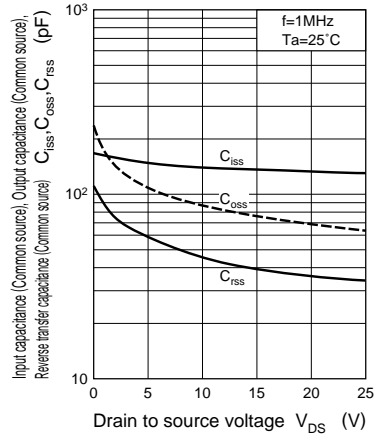
$R_{DS(on)} - I_D$



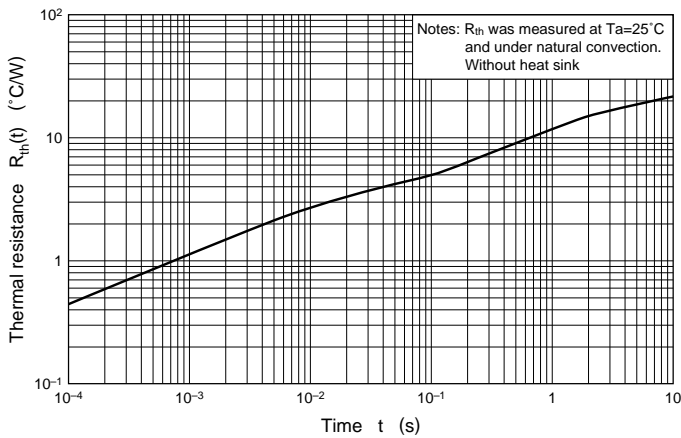
$|Y_{fs}| - I_D$



$C_{iss}, C_{oss}, C_{rss} - V_{DS}$



$R_{th(t)} - t$



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