PUB4702

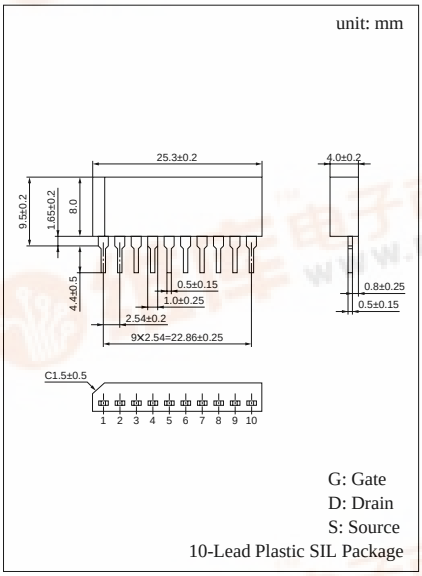
Silicon N-Channel Power F-MOS FET

■ 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°C)

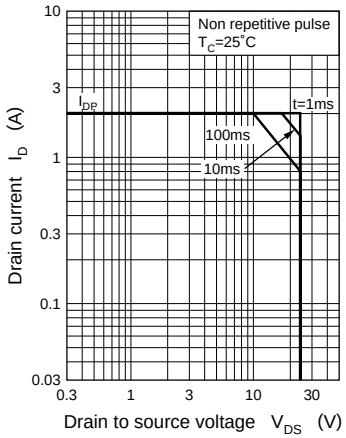
Parameter		Symbol	Ratings	Unit
Drain to Source breakdown voltage		V_{DSS}	35 ± 10	V
Gate to Source voltage		V_{GSS}	±15	V
Drain current	DC	I_D	±1	A
	Pulse	I_{DP}	±2	A
Avalanche energy capacity		EAS*	2.5	mJ
Allowable power dissipation	T_C = 25°C	P_D	15	W
	Ta = 25°C		3.5	
Channel temperature		T_{ch}	150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

* L = 5mH, I_L = 1A, 1 pulse

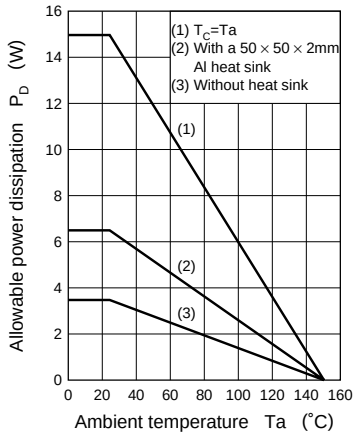
■ Electrical Characteristics (T_C = 25°C)

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

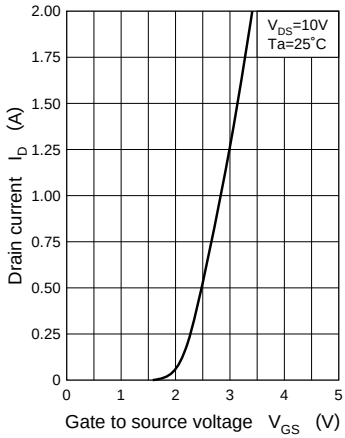
Area of safe operation (ASO)



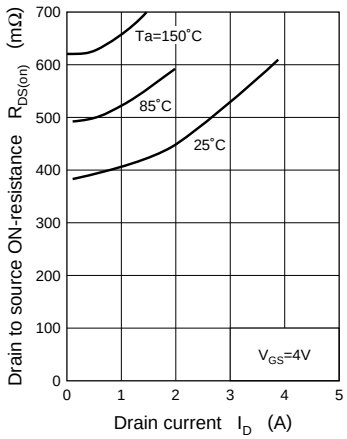
P_D — Ta



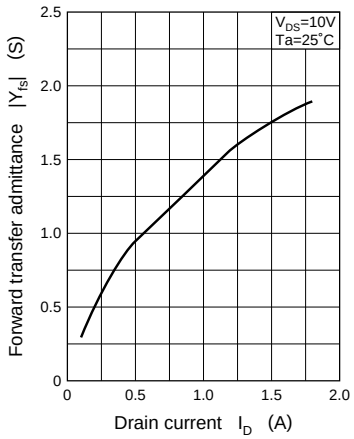
I_D — V_{GS}



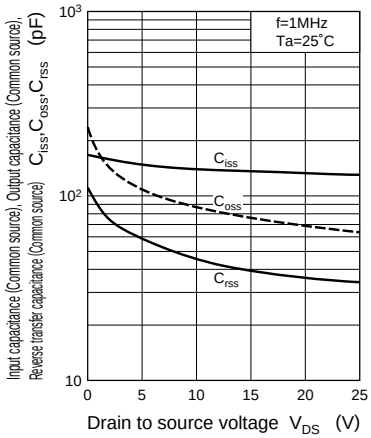
$R_{DS(on)}$ — I_D



$|Y_{fs}|$ — I_D



C_{iss}, C_{oss}, C_{rss} — V_{DS}



$R_{th(t)}$ — t