

PU7456

Silicon N-Channel Power F-MOS (with built-in zener diode)

■ Features

- High avalanche energy capability
- Withstanding high electrostatic voltage
- No secondary breakdown
- High breakdown voltage, large allowable power dissipation
- Low-voltage drive possible

■ Applications

- Non-contact relay
- Solenoid drive
- Motor drive
- Control equipment
- Switching mode regulator

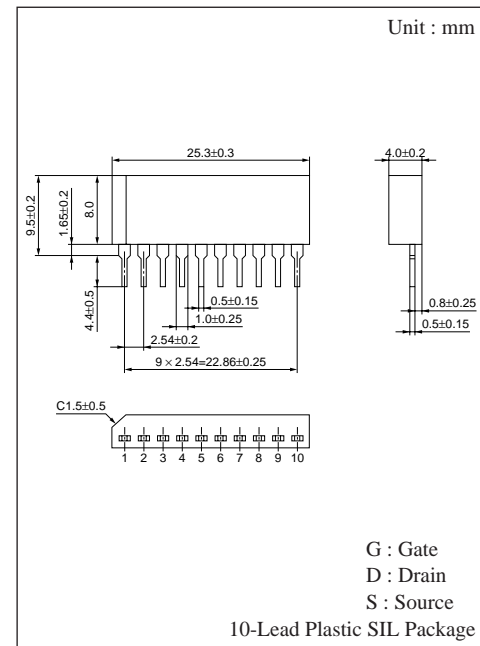
■ Absolute Maximum Ratings (T_c = 25°C)

Parameter	Symbol	Rating	Unit	
Drain-Source breakdown voltage	V _{DSS}	35±10	V	
Gate-Source voltage	V _{GSS}	±20	V	
Drain current	DC	I _D	±6	A
	Pulse	I _{DP}	±12	A
Avalanche energy capability	Non repetition	EAS*	200	mJ
	Repetition	EAR	8	mJ
Allowable power dissipation	T _c = 25°C	P _D	15	W
	T _a = 25°C		3.5	
Channel temperature	T _{ch}	150	°C	
Storage temperature	T _{stg}	-55 to +150	°C	

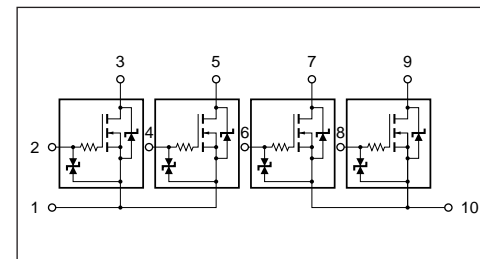
* L=11.2mH, I_L= 6A, V_{DD}= 50V, 1 pulse

■ Electrical Characteristics (T_c = 25°C)

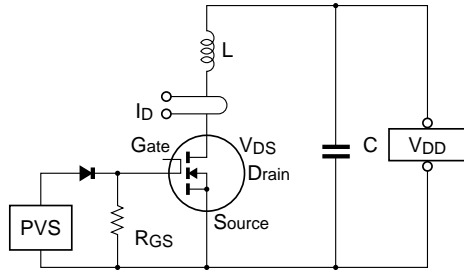
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I _{DSS}	V _{DS} = 20V, V _{GS} = 0			10	μA
Gate-Source leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0			±1	μA
Drain-Source breakdown voltage	V _{DSS}	I _D =1mA, V _{GS} = 0	25		45	V
Gate threshold voltage	V _{th}	V _{DS} = 25V, I _D =1mA	1		2.5	V
Drain-Source ON-resistance	R _{DS(on)1}	V _{GS} =10V, I _D = 3A		110	140	mΩ
	R _{DS(on)2}	V _{GS} = 4V, I _D = 3A		160	220	mΩ
Forward transadmittance	Y _{fs}	V _{DS} = 25V, I _D = 3A	3	5.5		S
Diode forward voltage	V _{DSF}	I _{DR} = 6A, V _{GS} = 0			-1.7	V
Input capacitance	C _{iss}	V _{DS} =10V, V _{GS} = 0, f=1MHz		40		pF
Output capacitance	C _{oss}				300	pF
Feedback capacitance	C _{rss}				20	pF
Turn-on time	t _{on}	V _{GS} =10V, I _D = 3A V _{DD} = 30V, R _L =10Ω		1		μs
Fall time	t _f				2	μs
Turn-off time (delay time)	t _{d(off)}				1	μs



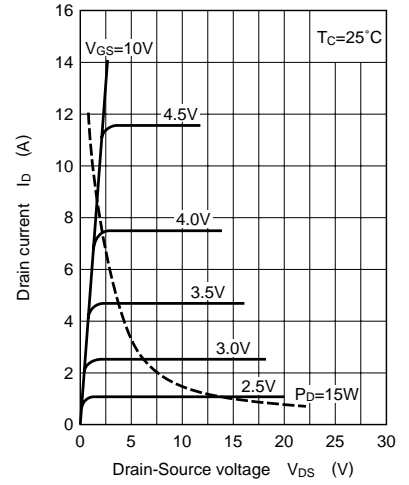
■ Internal Connection



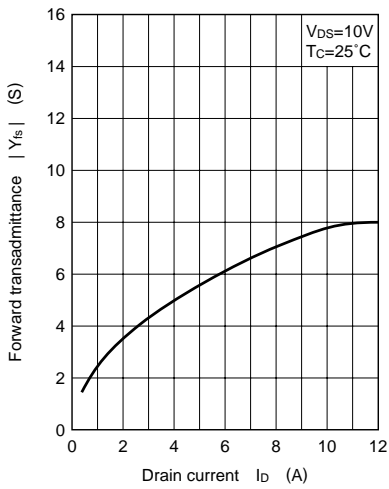
Avalanche capability test circuit



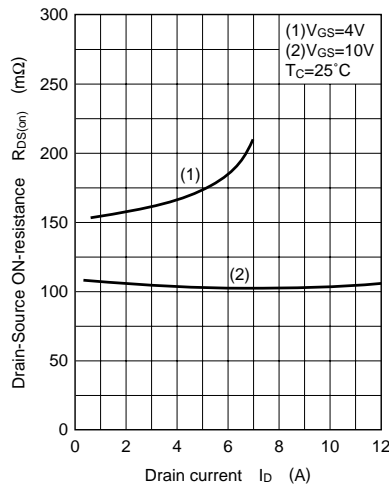
$I_D - V_{DS}$



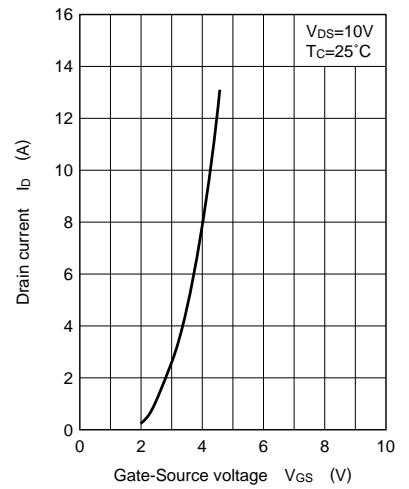
$|Y_{fs}| - I_D$



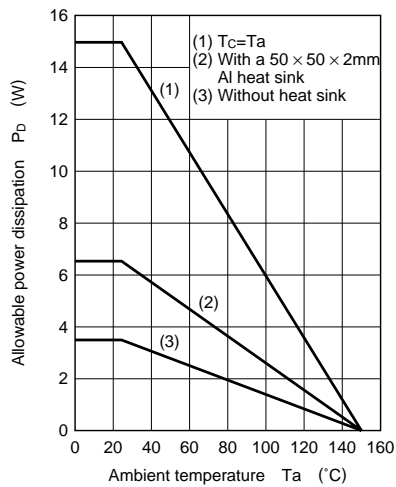
$R_{DS(on)} - I_D$



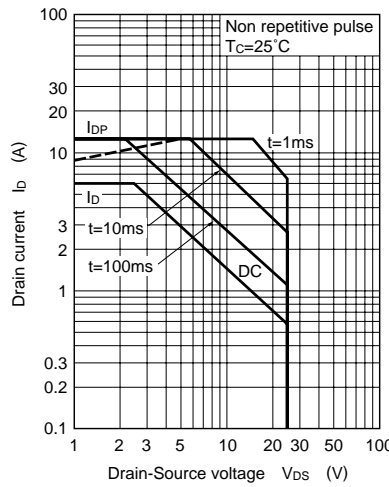
$I_D - V_{GS}$



$P_D - T_a$



Area of safe operation (ASO)



$I_{DR} - V_{SD}$

