

N-CHANNEL SILICON POWER MOSFET

F- I SERIES

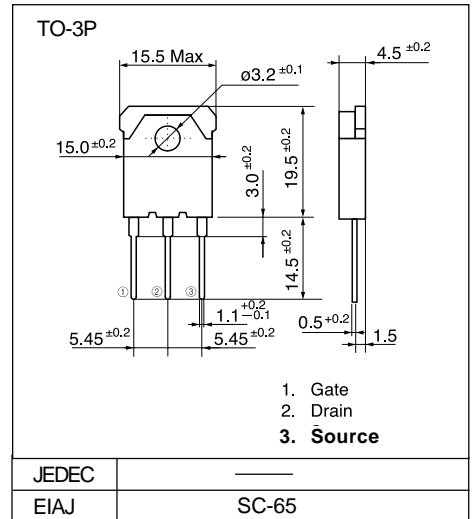
■ Features

- High speed switching
- Low on-resistance
- No secondary breakdown
- Low driving power
- High voltage

■ Applications

- Switching regulators
- UPS (Uninterruptible Power Supply)
- DC-DC converters
- General purpose power amplifier

■ Outline Drawings

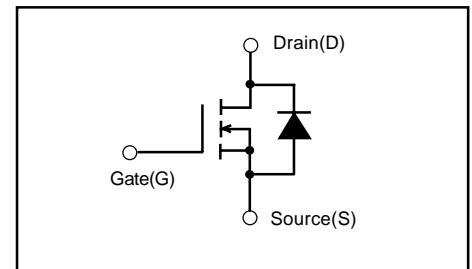


■ Maximum ratings and characteristics

● Absolute maximum ratings (T_c=25°C unless otherwise specified)

Item	Symbol	Rating	Unit
Drain-source voltage	V _{DS}	500	V
Continuous drain current	I _D	18	A
Pulsed drain current	I _{D(puls)}	72	A
Continuous reverse drain current	I _{DR}	18	A
Gate-source peak voltage	V _{GS}	±20	V
Max. power dissipation	P _D	125	W
Operating and storage temperature range	T _{ch} T _{stg}	+150 -55 to +150	°C

■ Equivalent circuit schematic



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

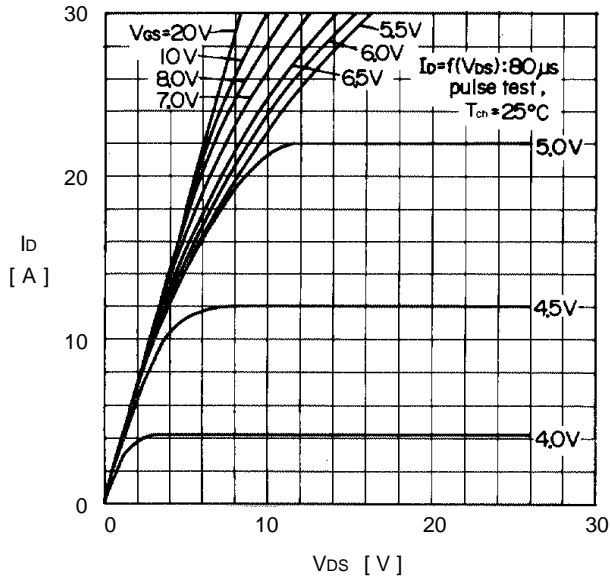
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V _{(BR)DSS}	I _D =1mA V _{GS} =0V	500			V
Gate threshold voltage	V _{GS(th)}	I _D =10mA V _{DS} =V _{GS}	2.1	3.0	4.0	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =500V V _{GS} =0V T _{ch} =25°C		10	500	μA
Gate-source leakage current	I _{GSS}	V _{GS} =±20V V _{DS} =0V		10	100	nA
Drain-source on-state resistance	R _{DS(on)}	I _D =8A V _{GS} =10V		0.28	0.33	Ω
Forward transconductance	g _{fs}	I _D =8A V _{DS} =25V	8.0	16.0		S
Input capacitance	C _{iss}	V _{DS} =25V		2600	4000	pF
Output capacitance	C _{oss}	V _{GS} =0V		330	500	pF
Reverse transfer capacitance	C _{rss}	f=1MHz		130	200	pF
Switching time (t _{off} =t _{d(off)} +t _i)	t _{on} t _{d(off)} t _r	V _{CC} =30V R _G =50 Ω I _D =2.8A V _{GS} =10V		130 330 110	195 430 140	ns
Diode forward on-voltage	V _{SD}	I _F =2×I _{DR} V _{GS} =0V T _{ch} =25°C		1.0	1.7	V
Reverse recovery time	t _{rr}	I _F =I _{DR} di/dt=100A/μs T _{ch} =25°C		600		ns

● Thermal characteristics

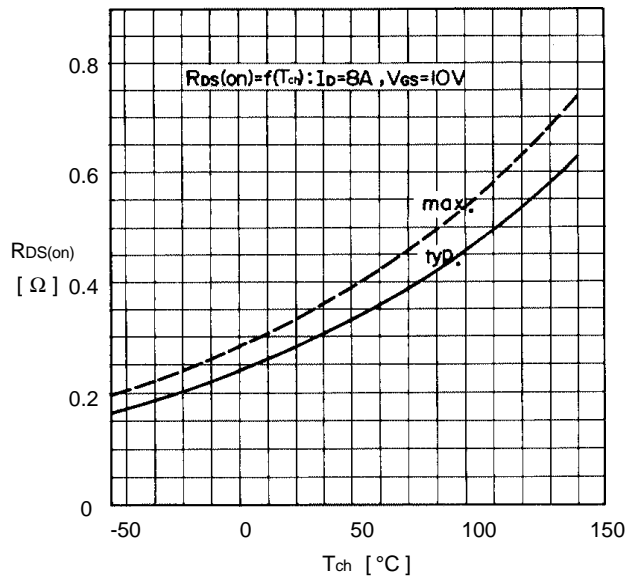
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-a)}	channel to ambient			35	°C/W
	R _{th(ch-c)}	channel to case			1.0	°C/W

Characteristics

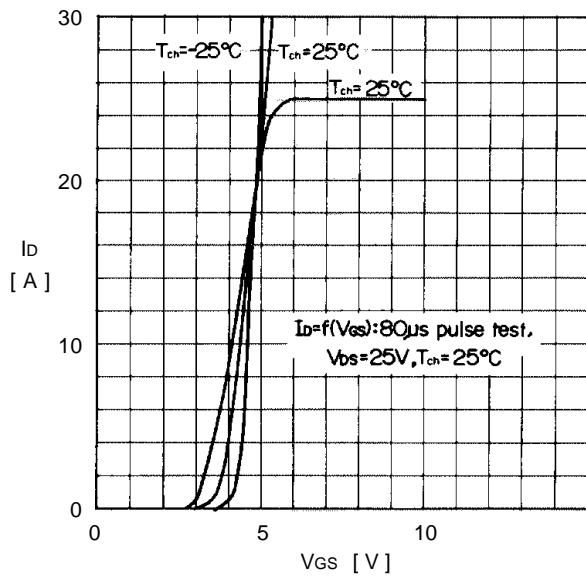
Typical output characteristics



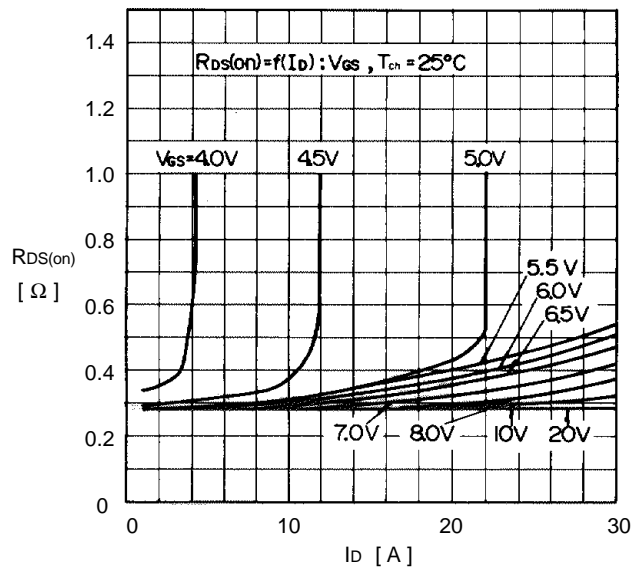
On state resistance vs. T_{ch}



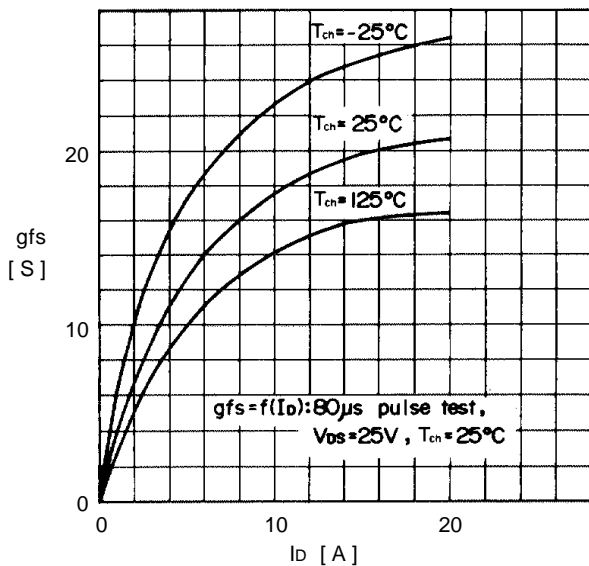
Typical transfer characteristics



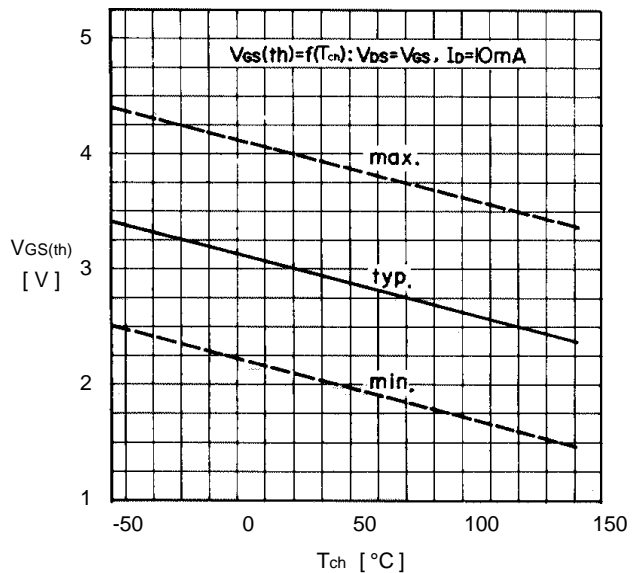
Typical Drain-Source on state resistance vs. I_D



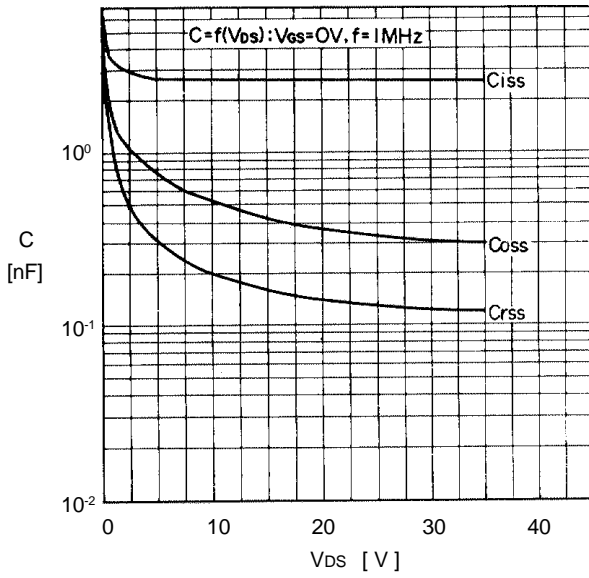
Typical forward transconductance vs. I_D



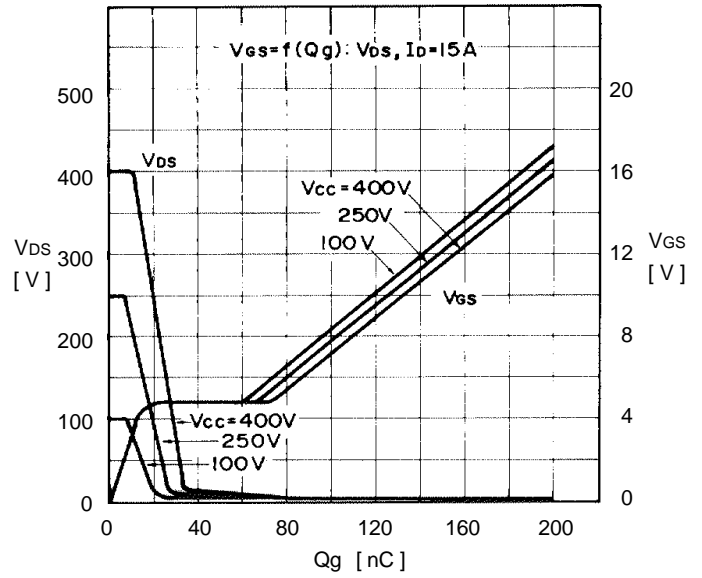
Gate threshold voltage vs. T_{ch}



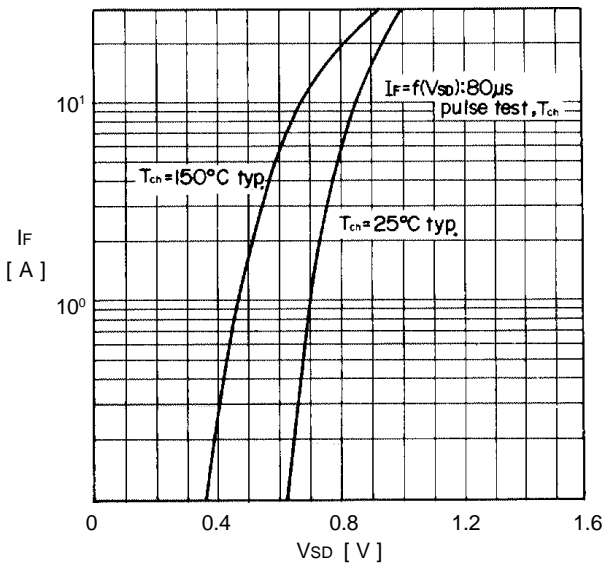
Typical capacitance vs. V_{DS}



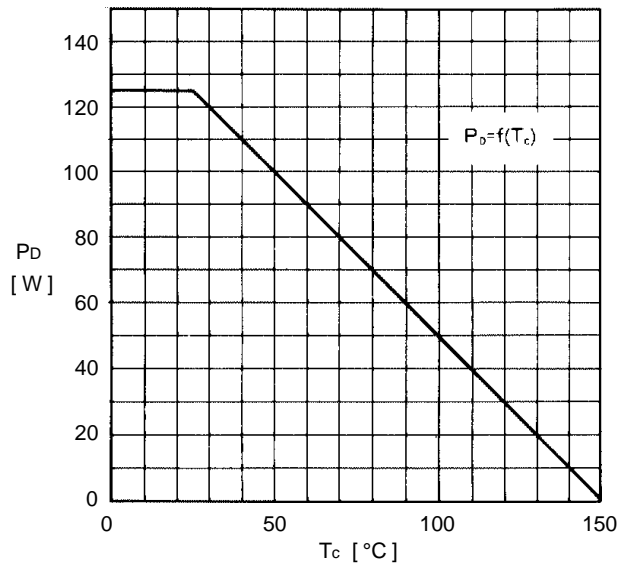
Typical input charge



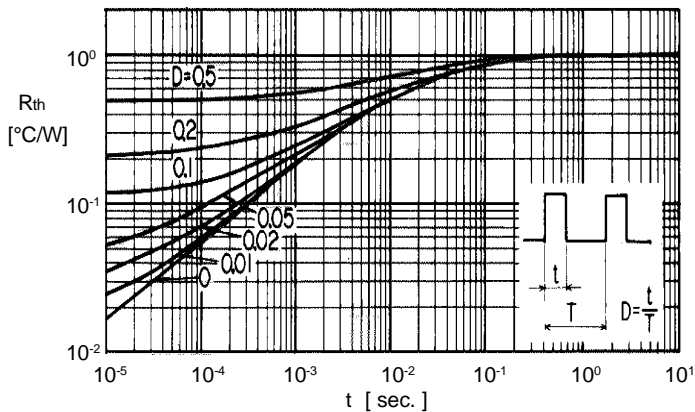
Forward characteristics of reverse diode



Allowable power dissipation vs. T_c



Transient thermal impedance



Safe operating area

