

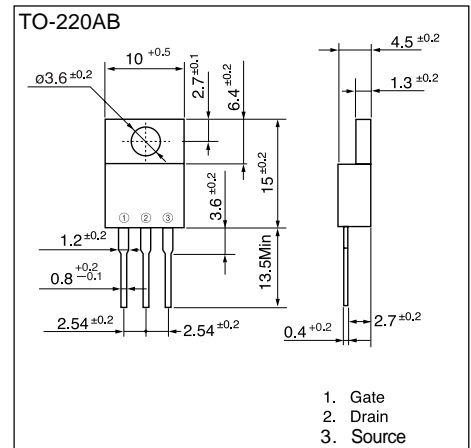
N-CHANNEL SILICON POWER MOS-FET

■ 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



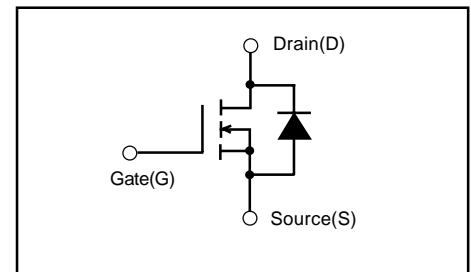
■ Maximum ratings and characteristic Absolute maximum ratings

● (T_c=25°C unless otherwise specified)

Item	Symbol	Rating	Unit
Drain-source voltage	V _{DS}	60	V
Continuous drain current	I _D	± 50	A
Pulsed drain current	I _D (puls)	±200	A
Gate-source voltage	V _{GS}	±30	V
Maximum Avalanche Energy	E _{AV} *1	867	mJ
Max. power dissipation	P _d	80	W
Operating and storage temperature range	T _{ch} T _{stg}	+150 -55 to +150	°C

*1 L=0.463mH, V_{cc}=24V

■ Equivalent circuit schematic



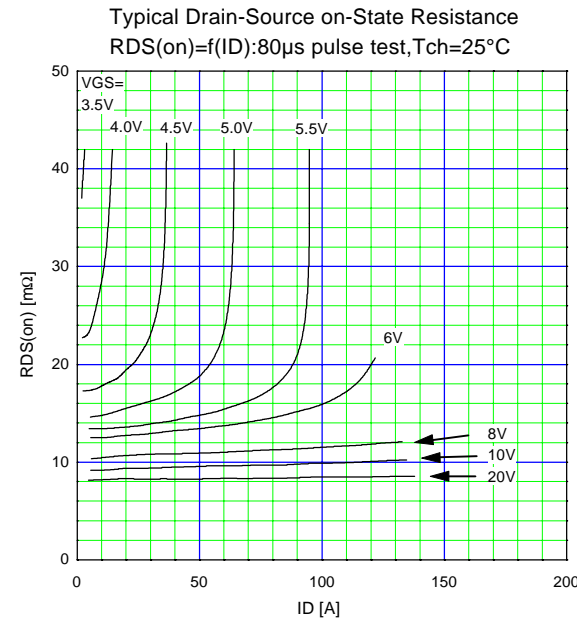
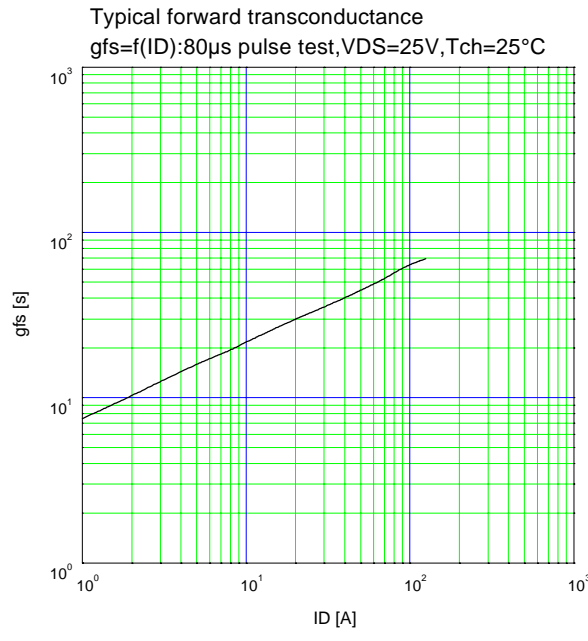
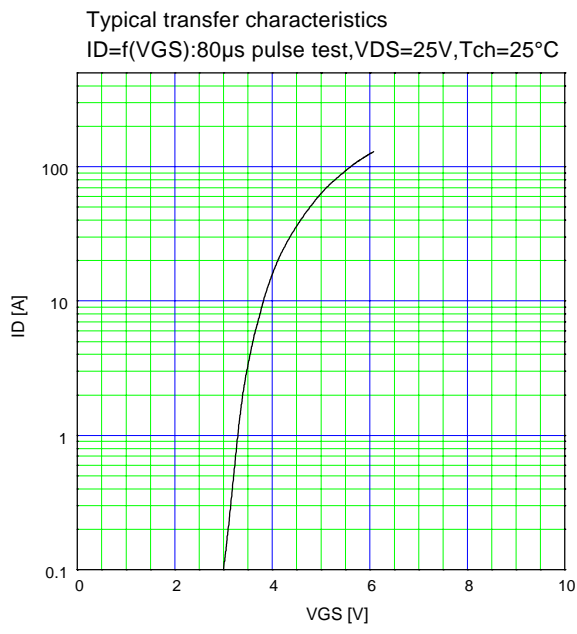
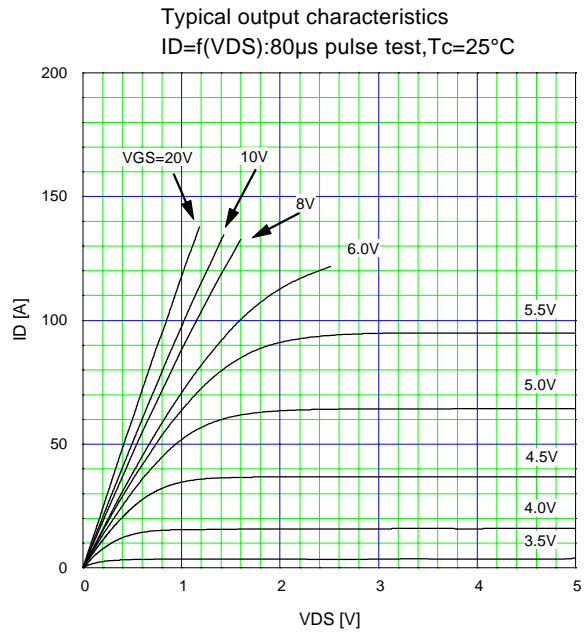
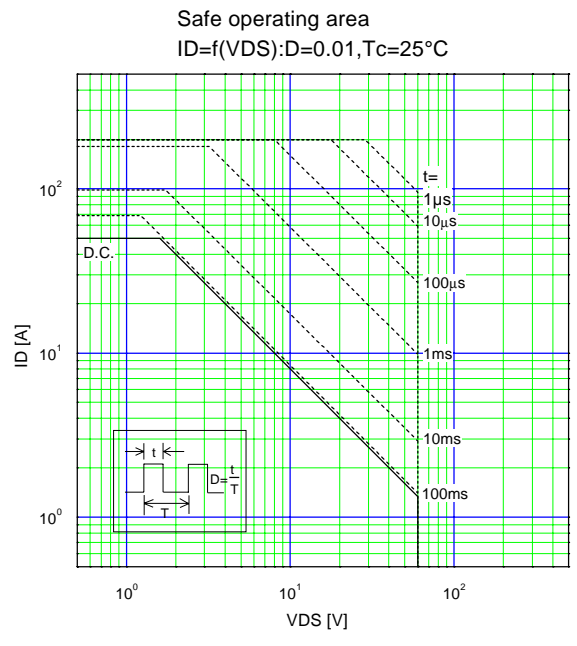
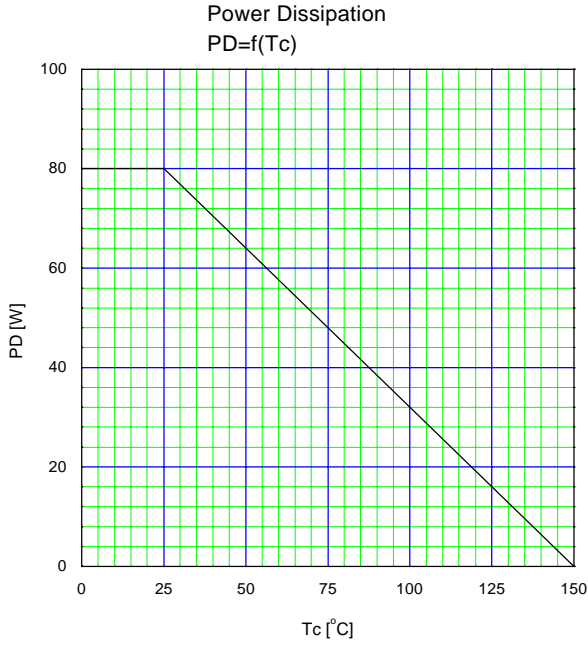
● Electrical characteristics (T_c =25°C unless otherwise specified)

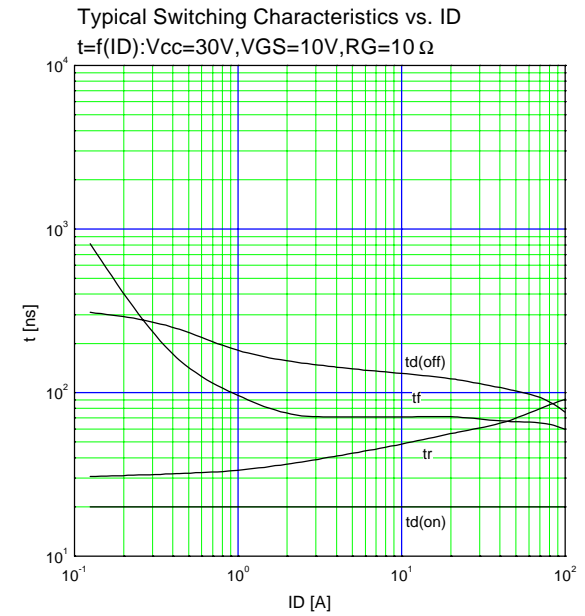
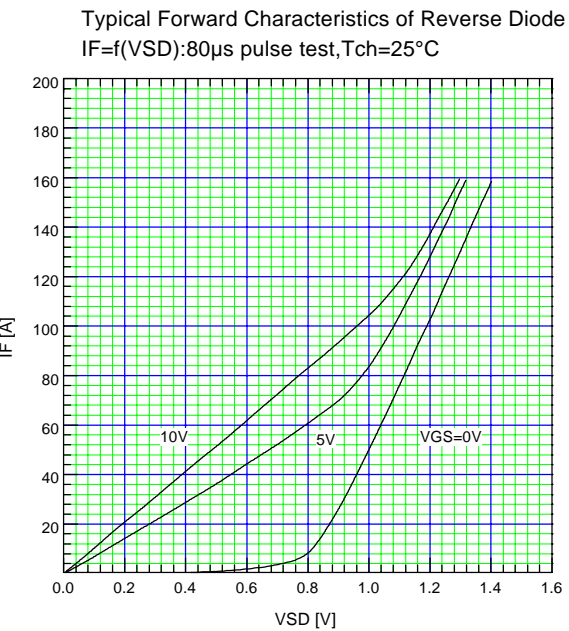
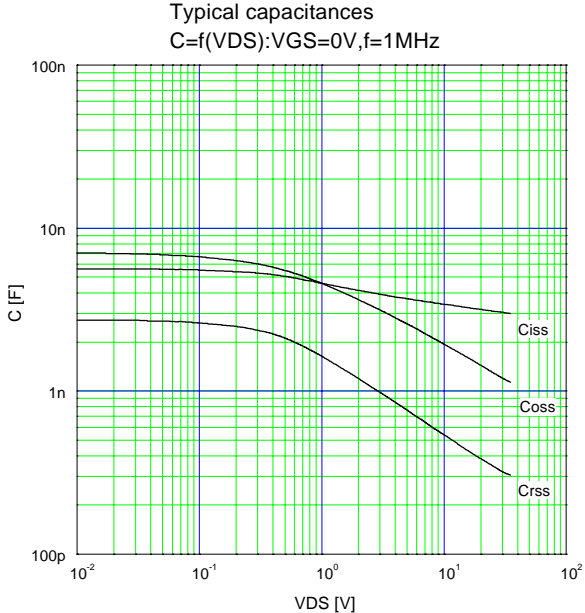
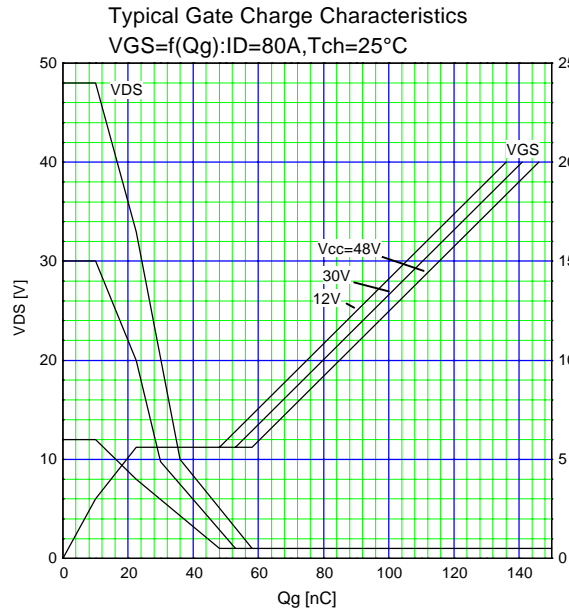
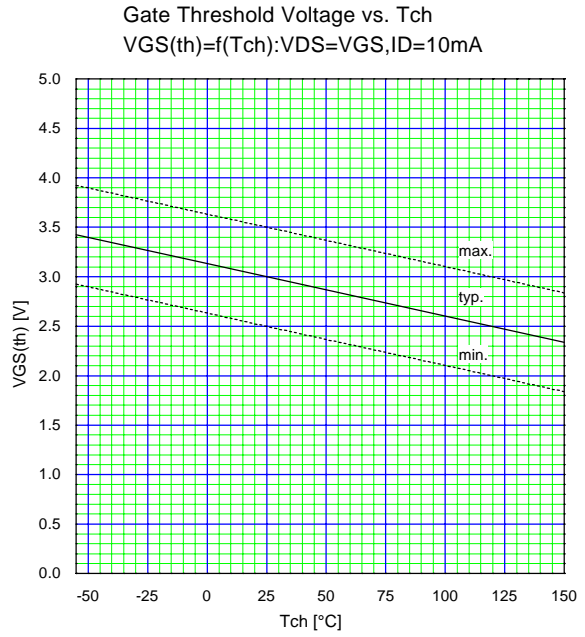
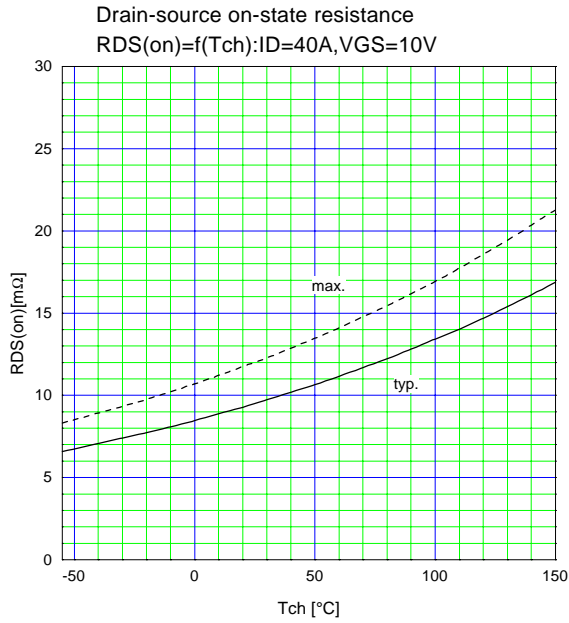
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V _{(BR)DSS}	I _D =1mA V _{GS} =0V	60			V
Gate threshold voltage	V _{GS(th)}	I _D =1mA V _{DS} =V _{GS}	2.5	3.0	3.5	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V V _{GS} =0V	T _{ch} =25°C	10	500	μA
			T _{ch} =125°C	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 =40A V _{GS} =10V		9.5	12	mΩ
Forward transconductance	g _{fs}	I _D =40A V _{DS} =25V	20	40		S
Input capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V f=1MHz		3100	4650	pF
Output capacitance	C _{oss}			1300	1950	
Reverse transfer capacitance	C _{rss}			350	530	
Turn-on time t _{on}	td(on)	V _{CC} =30V I _D =80A V _{GS} =10V R _{GS} =10Ω		20	30	ns
	t _r			85	120	
Turn-off time t _{off}	td(off)			88	130	
	t _f			65	120	
Avalanche capability	I _{AV}	L=100μH T _{ch} =25°C	50			A
Diode forward on-voltage	V _{SD}	I _F =50A V _{GS} =0V T _{ch} =25°C		1.0	1.5	V
Reverse recovery time	t _{rr}	I _F =50A V _{GS} =0V		70		ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		0.13		μC

● Thermal characteristics

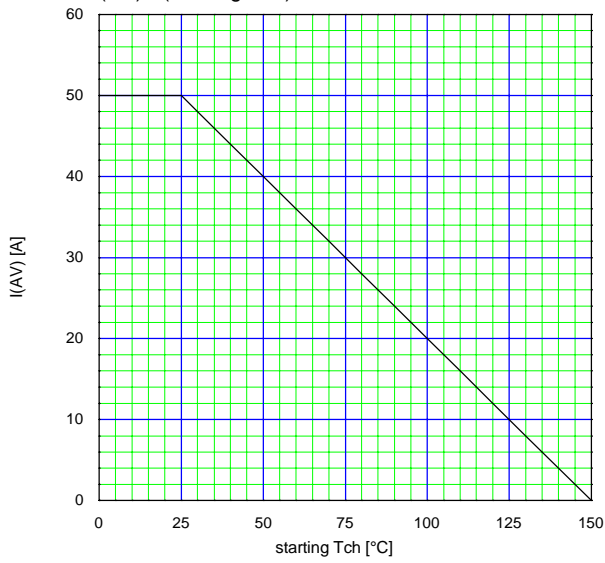
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			1.56	°C/W
	R _{th(ch-a)}	channel to ambient			75.0	°C/W

Characteristics

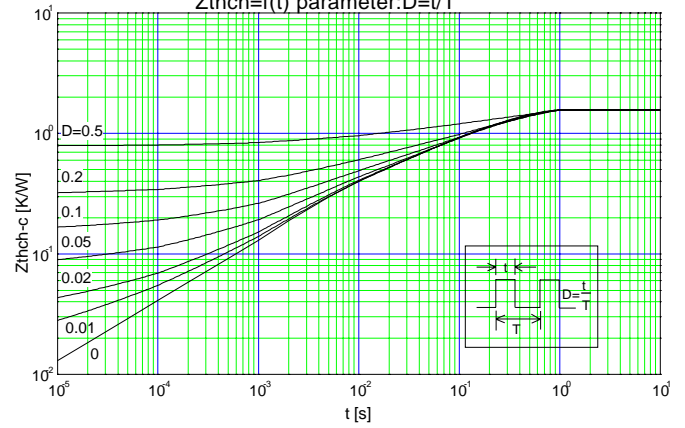




Maximum Avalanche Current vs. starting Tch
 $I(AV)=f(\text{starting Tch})$



Transient thermal impedance
 $Z_{thch}=f(t)$ parameter: $D=t/T$



Maximum Avalanche Energy vs. starting Tch
 $E(AV)=f(\text{starting Tch}): V_{cc}=24V, I(AV) \leq 50A$

