

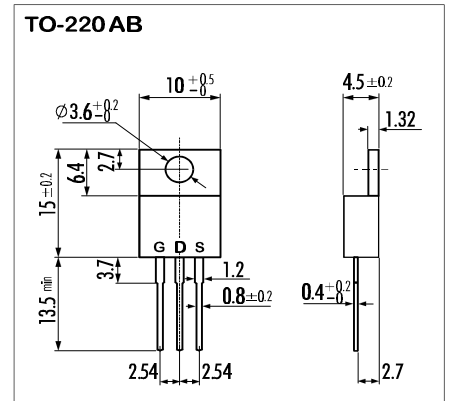
> Features

- High Current
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Forward Transconductance

> Applications

- Motor Control
- General Purpose Power Amplifier
- DC-DC converters

> Outline Drawing

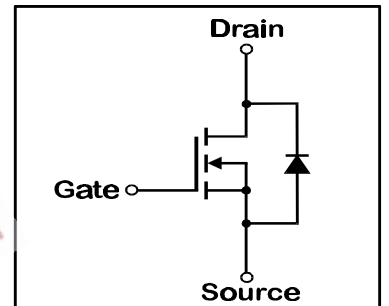


> Maximum Ratings and Characteristics

- Absolute Maximum Ratings (T_C=25°C), unless otherwise specified

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V _{DS}	60	V
Drain-Gate-Voltage (R _{GS} =20KΩ)	V _{DGR}	60	V
Continous Drain Current	I _D	45	A
Pulsed Drain Current	I _{D(puls)}	200	A
Gate-Source-Voltage	V _{GS}	±30	V
Max. Power Dissipation	P _D	80	W
Operating and Storage Temperature Range	T _{ch}	150	°C
	T _{stg}	-55 ~ +150	°C

> Equivalent Circuit



- Electrical Characteristics (T_C=25°C), unless otherwise specified

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	V _{(BR)DSS}	I _D =1mA V _{GS} =0V	60			V
Gate Threshold Voltage	V _{GS(th)}	I _D =10mA V _{DS} =V _{GS}	2,5	3,0	3,5	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V T _{ch} =25°C		10	500	μA
		V _{GS} =0V 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 =25A V _{GS} =10V		0,017	0,025	Ω
Forward Transconductance	g _{fs}	I _D =25A V _{DS} =25V	11	22		S
Input Capacitance	C _{iss}	V _{DS} =25V		2000	3000	pF
Output Capacitance	C _{oss}	V _{GS} =0V		800	1200	pF
Reverse Transfer Capacitance	C _{rss}	f=1MHz		300	450	pF
Turn-On-Time t _{on} (t _{on} =t _{d(on)} +t _r)	t _{d(on)}	V _{CC} =30V		25	40	ns
	t _r	I _D =45A		150	230	ns
Turn-Off-Time t _{off} (t _{off} =t _{d(off)} +t _f)	t _{d(off)}	V _{GS} =10V		140	210	ns
	t _f	R _{GS} =25 Ω		125	190	ns
Avalanche capability	I _{AV}	L=100μH T _{ch} =25°C	45			A
Diode Forward On-Voltage	V _{SD}	I _F =2I _{DR} V _{GS} =0V T _{ch} =25°C		1,30	1,95	V
Reverse Recovery Time	t _{rr}	I _F =I _{DR} V _{GS} =0V		60		ns
Reverse Recovery Charge	Q _{rr}	-dI _F /dt=100A/μs T _{ch} =25°C		0,1		μC

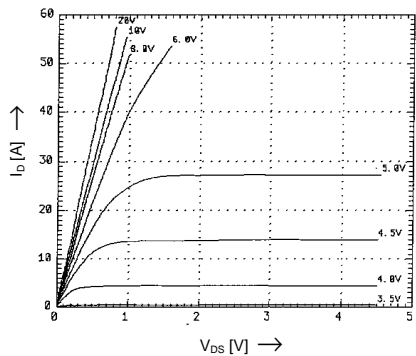
- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	R _{th(ch-a)}	channel to air			75	°C/W
	R _{th(ch-c)}	channel to case			1,56	°C/W

> Characteristics

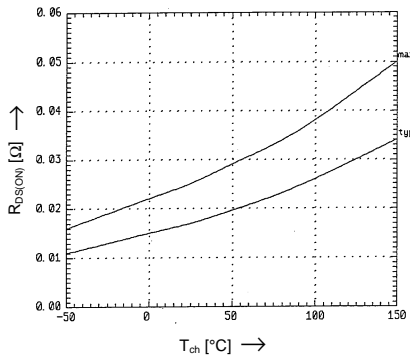
Typical Output Characteristics

$I_D = f(V_{DS})$; 80μs pulse test; $T_C = 25^\circ\text{C}$



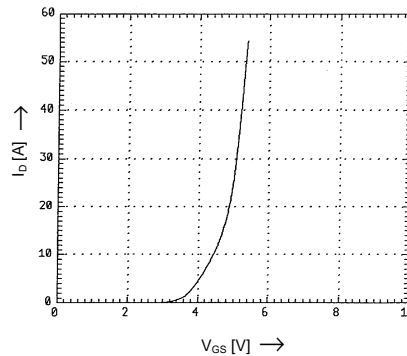
Drain-Source On-State Resistance

$R_{DS(on)} = f(T_{ch})$; $I_D = 25\text{A}$; $V_{GS} = 10\text{V}$



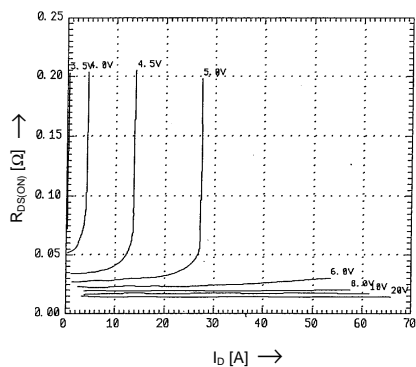
Typical Transfer Characteristics

$I_D = f(V_{GS})$; 80μs pulse test; $V_{DS} = 25\text{V}$; $T_{ch} = 25^\circ\text{C}$



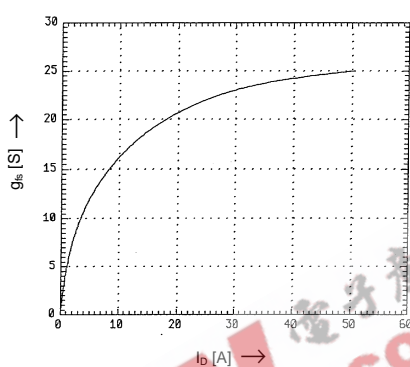
Typical Drain-Source On-State-Resistance

$R_{DS(on)} = f(I_D)$; 80μs pulse test; $T_C = 25^\circ\text{C}$



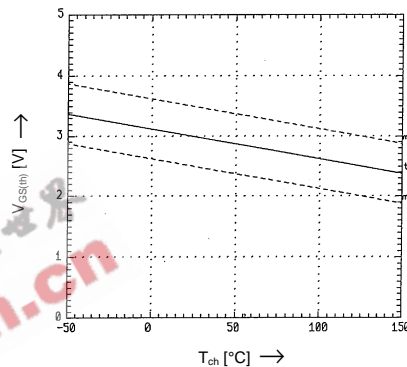
Typical Transconductance

$g_m = f(I_D)$; 80μs pulse test; $V_{DS} = 25\text{V}$; $T_{ch} = 25^\circ\text{C}$



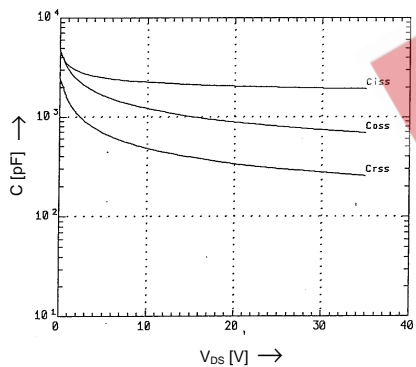
Gate Threshold Voltage

$V_{GS(th)} = f(T_{ch})$; $I_D = 10\text{mA}$; $V_{DS} = V_{GS}$



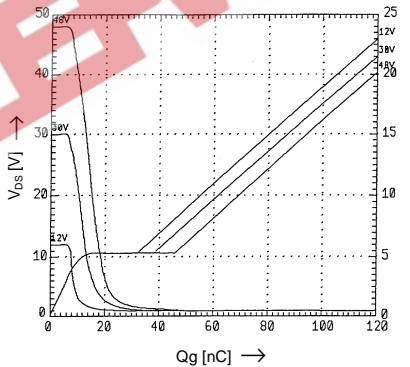
Typical Capacitances

$C = f(V_{DS})$; $V_{GS} = 0\text{V}$; $f = 1\text{MHz}$



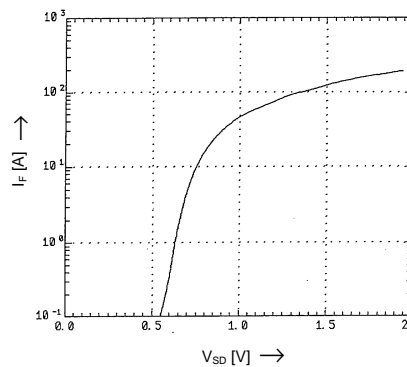
Typical Gate Charge Characteristics

$V_{GS} = f(Q_g)$; $I_D = 45\text{A}$



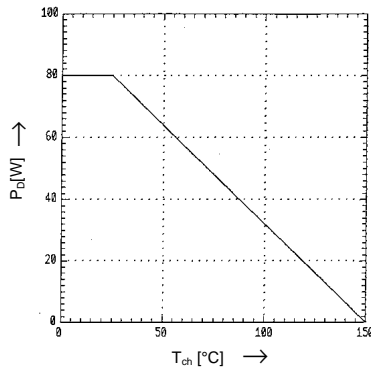
Forward Characteristics of Reverse Diode

$I_F = f(V_{SD})$; 80μs pulse test; $V_{GS} = 0\text{V}$



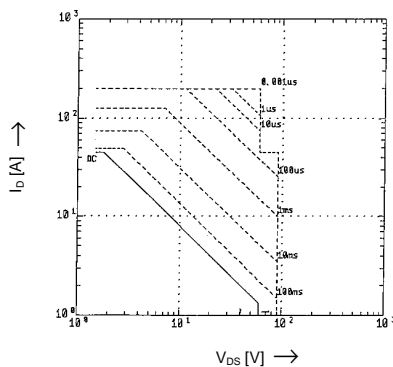
Power Dissipation

$P_D = f(T_C)$



Safe Operation Area

$I_D = f(V_{DS})$; $D = 0,01$; $T_C = 25^\circ\text{C}$



Transient thermal impedance

Transient thermal impedance

$Z_{th(ch-c)} = f(t)$ parameter: $D = t/T$

