

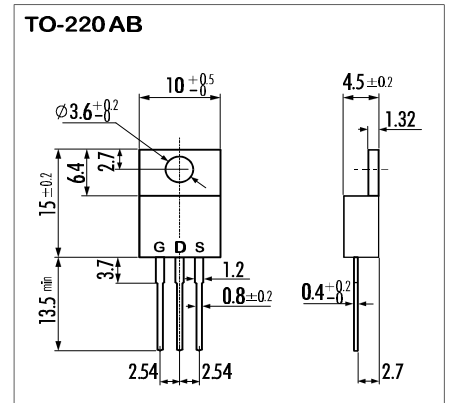
> Features

- High Speed Switching
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Voltage
- $V_{GS} = \pm 30V$ Guarantee
- Avalanche Proof

> Applications

- Switching Regulators
- UPS
- DC-DC converters
- General Purpose Power Amplifier

> Outline Drawing

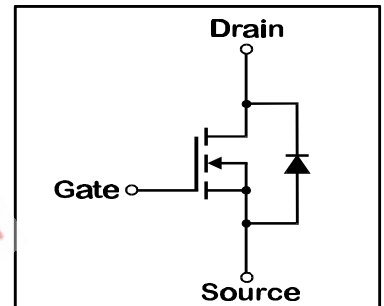


> Maximum Ratings and Characteristics

- Absolute Maximum Ratings ($T_C=25^\circ C$), unless otherwise specified

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	450	V
Drain-Gate-Voltage ($R_{GS}=20K\Omega$)	V_{DGR}	450	V
Continuous Drain Current	I_D	9	A
Pulsed Drain Current	$I_{D(puls)}$	36	A
Gate-Source-Voltage	V_{GS}	± 30	V
Max. Power Dissipation	P_D	60	W
Operating and Storage Temperature Range	T_{ch}	150	$^\circ C$
	T_{stg}	-55 ~ +150	$^\circ C$

> Equivalent Circuit



- Electrical Characteristics ($T_C=25^\circ C$), unless otherwise specified

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	$V_{(BR)DSS}$	$I_D=1mA$ $V_{GS}=0V$	450			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}	$V_{DS}=450V$ $T_{ch}=25^\circ C$			500	μA
		$V_{GS}=0V$ $T_{ch}=125^\circ C$			1,0	mA
Gate Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	$I_D=4,5A$ $V_{GS}=10V$		0,87	1,0	Ω
Forward Transconductance	g_{fs}	$I_D=4,5A$ $V_{DS}=25V$	3,0	6,6		S
Input Capacitance	C_{iss}	$V_{DS}=25V$		1150	1700	pF
Output Capacitance	C_{oss}	$V_{GS}=0V$		130	200	pF
Reverse Transfer Capacitance	C_{rss}	$f=1MHz$		50	75	pF
Turn-On-Time t_{on} ($t_{on}=t_{d(on)}+t_r$)	$t_{d(on)}$	$V_{CC}=300V$		20	30	ns
	t_r	$I_D=9A$		50	75	ns
Turn-Off-Time t_{off} ($t_{off}=t_{d(off)}+t_f$)	$t_{d(off)}$	$V_{GS}=10V$		60	90	ns
	t_f	$R_{GS}=10\Omega$		35	55	ns
Avalanche Capability	I_{AV}	$L = 100\mu H$ $T_{ch}=25^\circ C$	9,0			A
Diode Forward On-Voltage	V_{SD}	$I_F=2I_{DR}$ $V_{GS}=0V$ $T_{ch}=25^\circ C$		1,1	1,65	V
Reverse Recovery Time	t_{rr}	$I_F=I_{DR}$ $V_{GS}=0V$		550		ns
Reverse Recovery Charge	Q_{rr}	$-dI_F/dt=100A/\mu s$ $T_{ch}=25^\circ C$		3,9		μC

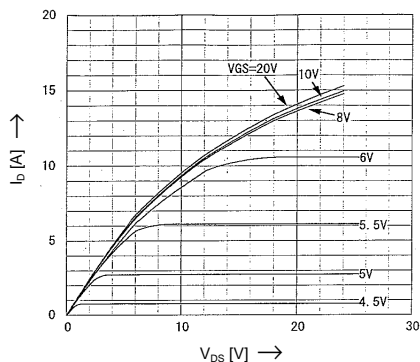
- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			75	$^\circ C/W$
	$R_{th(ch-c)}$	channel to case			2,08	$^\circ C/W$

> Characteristics

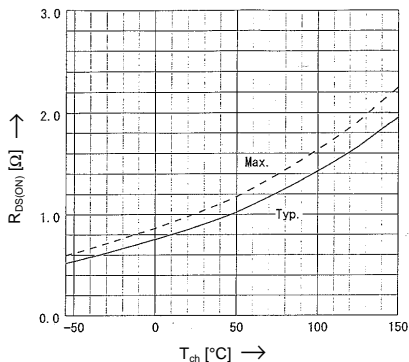
Typical Output Characteristics

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



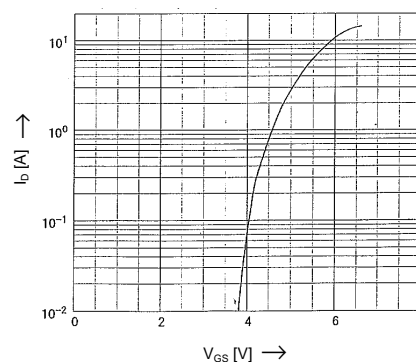
Drain-Source On-State Resistance

$R_{DS(on)} = f(T_{ch})$; $I_D = 4.5\text{A}$; $V_{GS} = 10\text{V}$



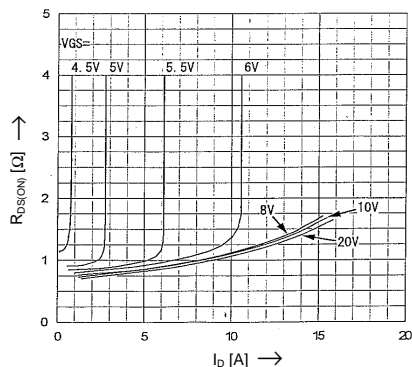
Typical Transfer Characteristics

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



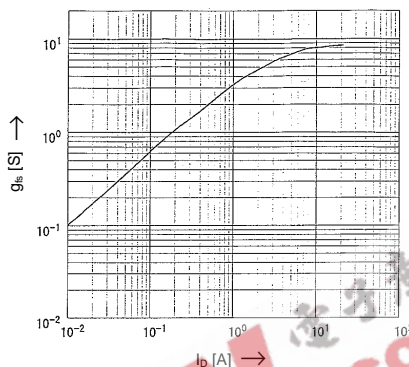
Typical Drain-Source On-State-Resistance

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



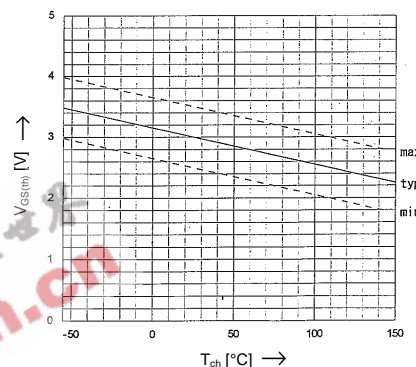
Typical Forward Transconductance

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



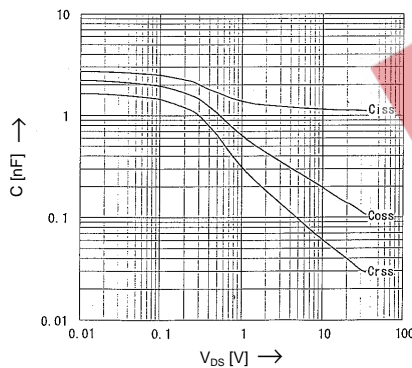
Gate Threshold Voltage

$V_{GS(th)} = f(T_{ch})$; $I_D = 1\text{mA}$; $V_{DS} = V_{GS}$



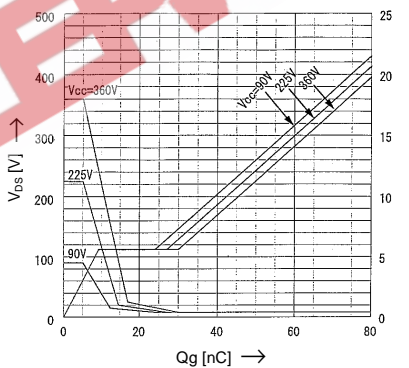
Typical Capacitances

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



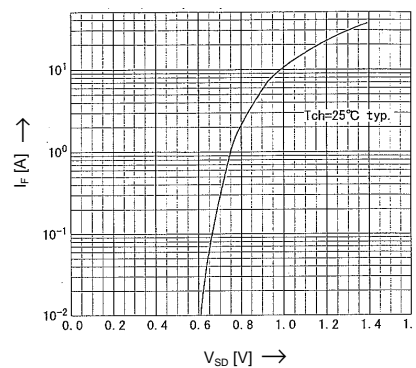
Typical Gate Charge Characteristics

$V_{GS} = f(Q_g)$; $I_D = 9\text{A}$; $T_{ch} = 25^\circ\text{C}$



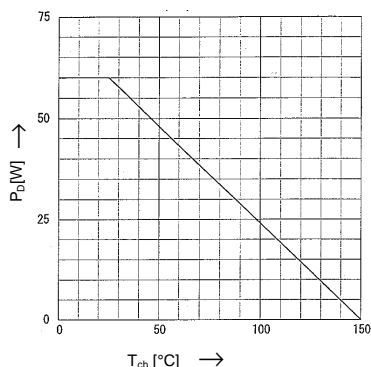
Forward Characteristics of Reverse Diode

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



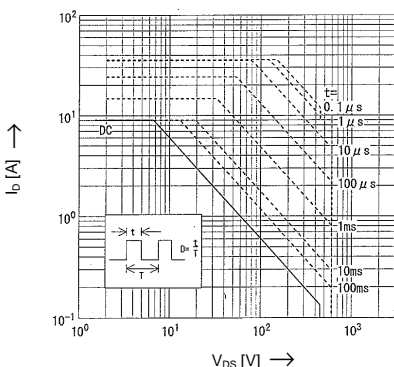
Power Dissipation

$P_D = f(T_{ch})$



Safe Operation Area

$I_D = f(V_{DS})$; $D = 0.01$; $T_{ch} = 25^\circ\text{C}$



Transient Thermal impedance

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

