

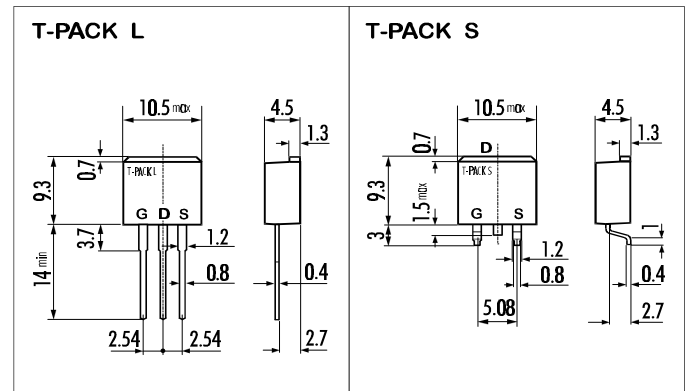
> Features

- 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

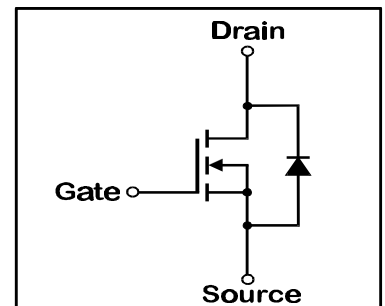


> Maximum Ratings and Characteristics

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

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	100	V
Drain-Gate-Voltage ($R_{GS}=20K\Omega$)	V_{DGR}	100	V
Continuous Drain Current	I_D	30	A
Pulsed Drain Current	$I_{D(puls)}$	120	A
Gate-Source-Voltage	V_{GS}	± 20	V
Max. Power Dissipation	P_D	80	W
Operating and Storage Temperature Range	T_{ch}	150	$^\circ\text{C}$
	T_{stg}	-55 ~ +150	$^\circ\text{C}$

> Equivalent Circuit



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

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ $V_{GS}=0\text{V}$	100			V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D=1\text{mA}$ $V_{DS}=V_{GS}$	1,0	1,5	2,5	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100\text{V}$ $T_{ch}=25^\circ\text{C}$		10	500	μA
		$V_{GS}=0\text{V}$ $T_{ch}=125^\circ\text{C}$		0,2	1,0	mA
Gate Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	$I_D=15\text{A}$ $V_{GS}=4\text{V}$		0,04	0,07	Ω
		$I_D=15\text{A}$ $V_{GS}=10\text{V}$		0,03	0,055	Ω
Forward Transconductance	g_{fs}	$I_D=15\text{A}$ $V_{DS}=25\text{V}$	15	30		S
Input Capacitance	C_{iss}	$V_{DS}=25\text{V}$		2500	3700	pF
Output Capacitance	C_{oss}	$V_{GS}=0\text{V}$		500	750	pF
Reverse Transfer Capacitance	C_{rss}	$f=1\text{MHz}$		250	380	pF
Turn-On-Time t_{on} ($t_{on}=t_{d(on)}+t_r$)	$t_{d(on)}$	$V_{CC}=30\text{V}$ $I_D=30\text{A}$ $V_{GS}=10\text{V}$ $R_{GS}=25\Omega$		20	30	ns
	t_r			140	210	ns
Turn-Off-Time t_{off} ($t_{off}=t_{d(off)}+t_f$)	$t_{d(off)}$			500	750	ns
	t_f			260	390	ns
Diode Forward On-Voltage	V_{SD}	$I_F=2I_{DR}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$		0,9	1,5	V
Reverse Recovery Time	t_{rr}	$I_F=I_{DR}$ $V_{GS}=0\text{V}$		130		ns
Reverse Recovery Charge	Q_{rr}	$-dI_F/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$		1,0		μC

- Thermal Characteristics

	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			125	$^\circ\text{C/W}$
	$R_{th(ch-c)}$	channel to case			1,56	$^\circ\text{C/W}$

N-channel MOS-FET			
100V	0,055Ω	30A	80W

2SK2446-L,S

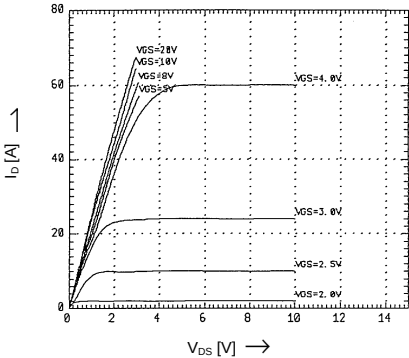
F-III Series



> Characteristics

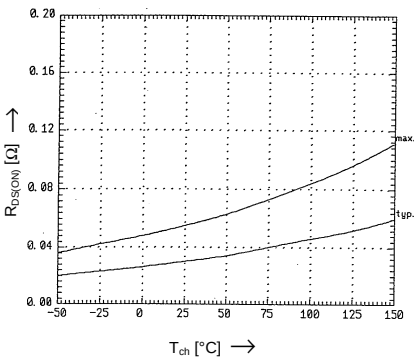
Typical Output Characteristics

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



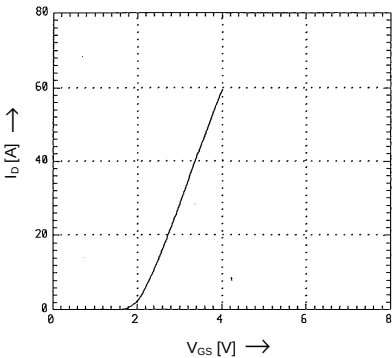
Drain-Source On-State Resistance vs. T_{ch}

$R_{DS(on)} = f(T_{ch})$; $I_D=15A$; $V_{GS}=10V$



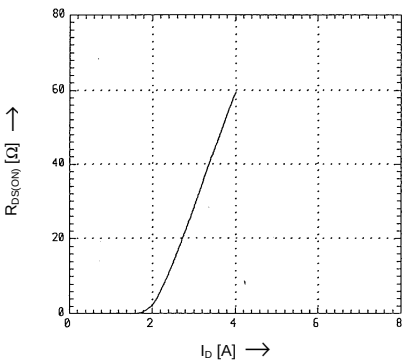
Typical Transfer Characteristics

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



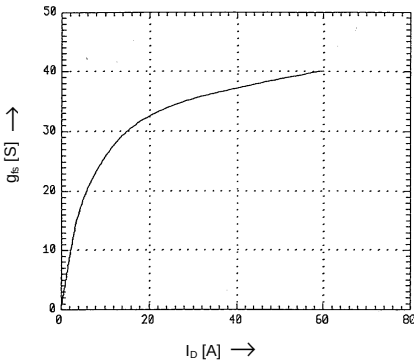
Typical Drain-Source On-State-Resistance vs. I_D

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



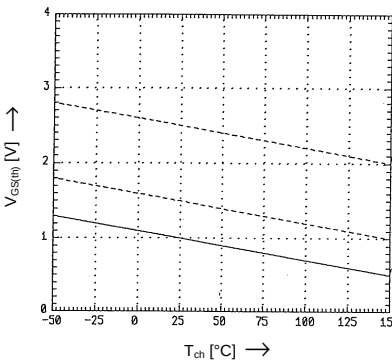
Typical Transconductance

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



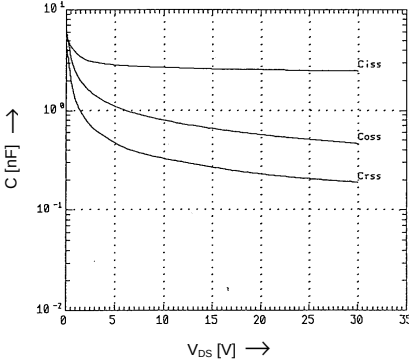
Gate Threshold Voltage

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



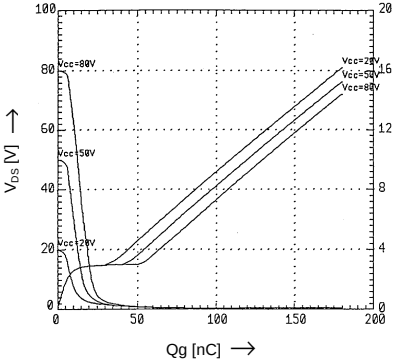
Typical Capacitances

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



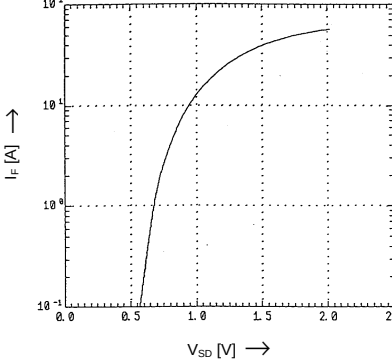
Typical Gate Charge Characteristic

$V_{GS}=f(Q_g)$; $I_D=30A$



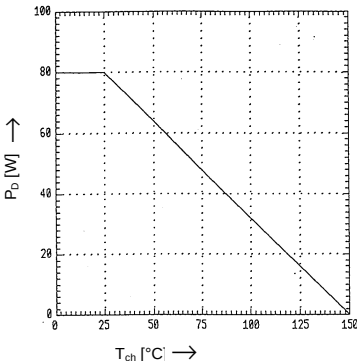
Forward Characteristics of Reverse Diode

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



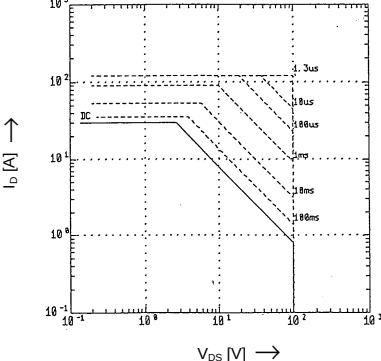
Power Dissipation

$P_D=f(T_C)$



Safe Operation Area

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



Transient Thermal impedance

$Z_{th(jc)}=f(t)$ parameter: $D=t/T$

