

P-Channel Enhancement Mode Field Effect Transistor

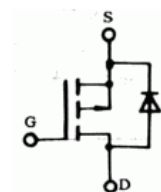
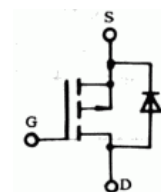
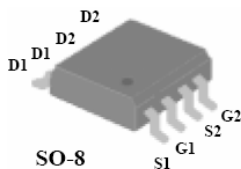
FEATURES

- Super high dense cell design for low $R_{DS(ON)}$
- Rugged and reliable
- Simple drive requirement
- SOP-8 package

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (m Ω) Typ
-30V	-5.3A	46@ $V_{GS}=-10V$
		78 @ $V_{GS}=-4.5V$



NOTE: The MT4953 is available in a lead-free package



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ^a @ $T_j=125^\circ\text{C}$	I_D	-5.3	A
- Pulse d^b	I_{DM}	-24	A
Drain-source Diode Forward Current ^a	I_S	-1.7	A
Maximum Power Dissipation ^a	P_D	2.5	W
Operating Junction and Storage Temperature Range	T_j, T_{STG}	-55 to 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to Ambient ^a	$R_{th JA}$	50	$^\circ\text{C/W}$
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MT4953

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V,I _D =-250μA	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V,V _{GS} =0V			-1	μA
Gate-Body Leakage	I _{GSS}	V _{GS} =±20V,V _{DS} =0V			±100	nA
ON CHARACTERITICS						
Gate Threshold Voltage	V _{GS} (th)	V _{DS} =V _{GS} ,I _D =-250μA	-1	-1.5	-2.5	V
Drain-Source On-State Resistance	R _{DS} (ON)	V _{GS} =-10V,I _D =-5.6A		46	55	m Ω
		V _{GS} =-4.5V,I _D =-4.2A		78	85	
Forward Transconductance	g _{FS}	V _{GS} =-5V,I _D =-5.6A		5		S
DAYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{DS} =-15V,V _{GS} =0V f=1.0MHz		582		pF
Output Capacitance	C _{OSS}			125		pF
Reverse Transfer Capacitance	C _{RSS}			86		pF
SWITCHING CHARACTERISISTICS						
Turn-On Delay Time	t _D (ON)	V _{DD} =-15V I _D =-5.3A, V _{GEN} =-4.5V R _L =10ohm R _{GEN} =10ohm		9		ns
Rise Time	t _r			10		ns
Turn-Off Delay Time	t _D (OFF)			38		ns
Fall Time	t _f			23		ns
Total Gate Charge	Q _g	V _{DS} =-15V,I _D =-1A V _{GS} =-10V		11.7		nC
Gate-Source Charge	Q _{gs}			2.1		nC
Gate-Drain Charge	Q _{gd}			2.9		nC

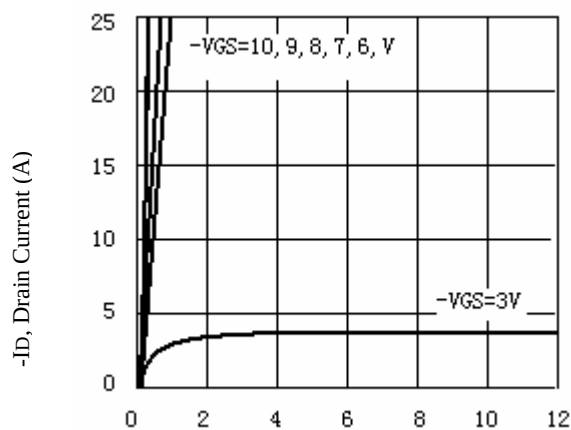
MT4953

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

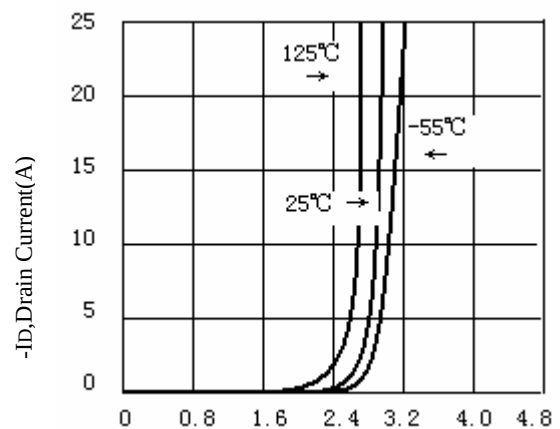
Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-1.7A		-0.84	-1.2	V

Notes

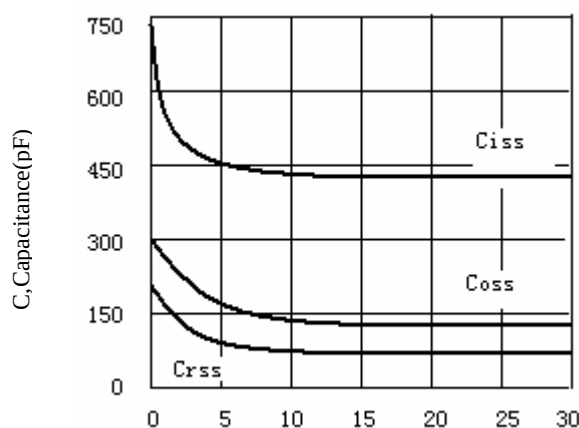
- Surface Mounted on FR4 Board, $t \leq 10\text{sec}$
- Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty $\leq 2\%$
- Guaranteed by design, not subject to production testing.



- V_{ds}, Drain-to-Source Voltage (V)
Figure 1. Output Characteristics



-V_{gs}, Gate-to-source Voltage (V)
Figure 2. Transfer Characteristics



- V_{GS}, Drain-to Source Voltage
Figure3. Capacitance

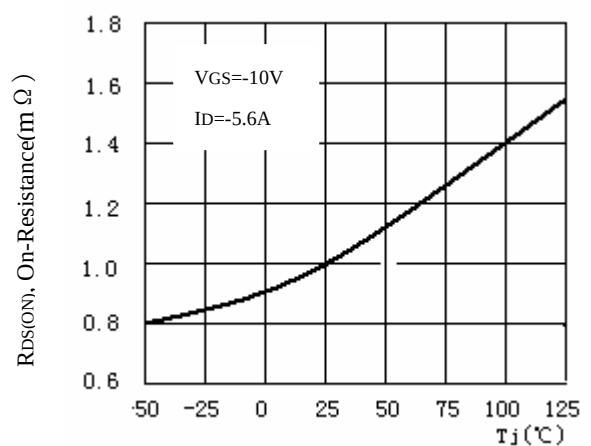


Figure4. On-Resistance Variation with Temperature

MT4953

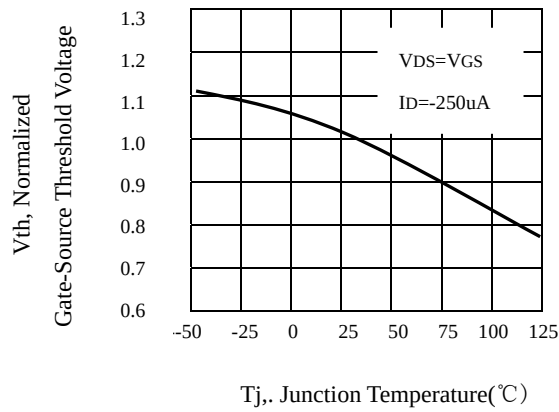


Figure 5. Gate Threshold Variation With Temperature

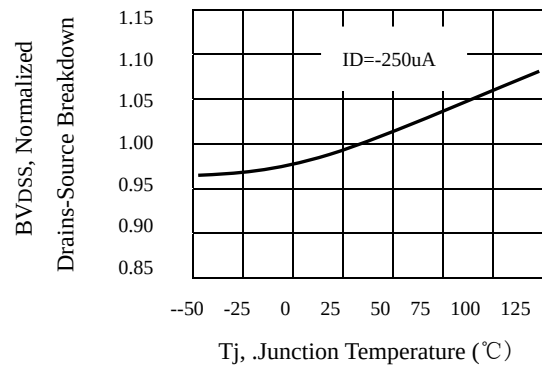


Figure 6. Breakdown Voltage Variation With Temperature

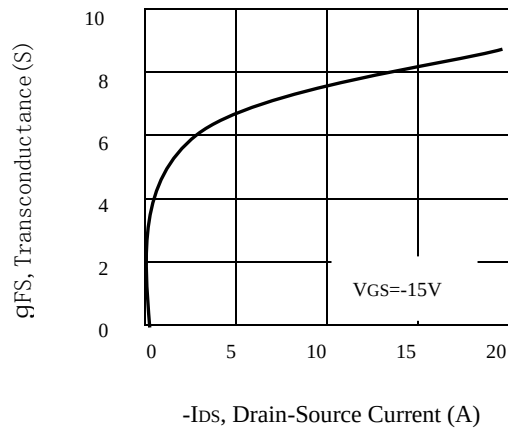


Figure 7. Transconductance Variation With Drain Current

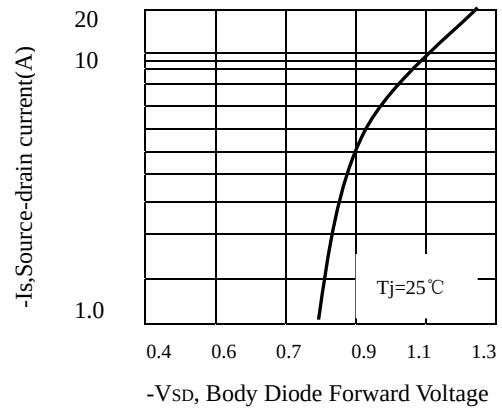


Figure 8. Body Diode Forward Voltage Variation with Source Current

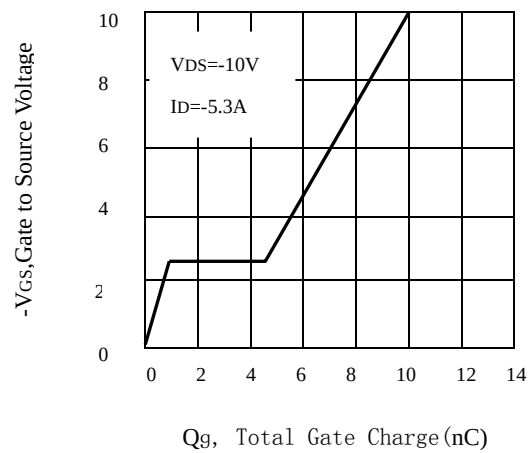


Figure 9. Gate Charge

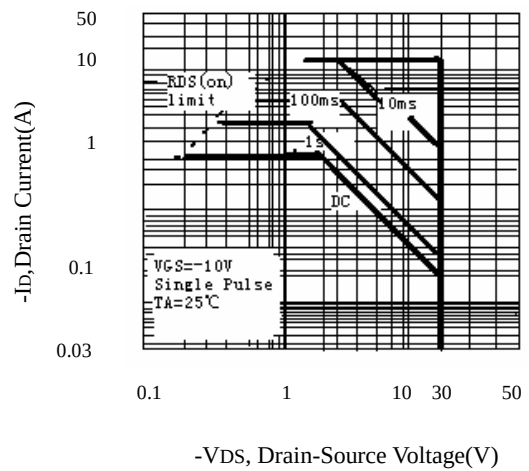


Figure 10. Maximum Safe Operating Area