

A0610

P-Channel Enhancement Mode MOSFET



Pb-free

Features

- High side switch
- Low ON-resistance
- Fast switching speed
- Rugged and reliable
- SOT-23 surface mount package
- Lead (Pb) free product

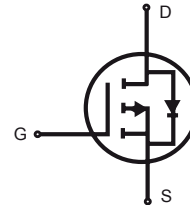
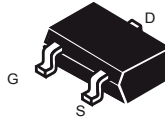
Product Summary

V _{DS} (V)	I _D (A)	R _{DS(ON)} (Ω) Max
- 60V	- 0.185A	7.5 @V _{GS} = - 10V
		10 @V _{GS} = - 4.5V

Applications

- Load switch
- Battery operated systems
- Power supply converter circuits
- Solid state relays

SOT-23



Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	- 60	V
Gate-Source Voltage	V _{GS}	± 20	V
Drain Current-Continuous @ T _C = 125°C	I _D	- 185	mA
-Pulsed ^b	I _{DM}	- 0.8	A
Drain-Source Diode Forward Current ^a	I _S	- 250	mA
Maximum Power Dissipation ^a	P _D	350	mW
Operating Junction and Storage Temperature Range	T _J , T _{STG}	- 55 to 150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Ambient ^a	R _{θJA}	350	°C/W
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Electrical Characteristics (TA = 25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D = - 10 μA	- 60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = - 60V, V _{GS} =0V			- 1	μA
Gate-Body Leakage	I _{GSS}	V _{GS} = ± 20V, V _{DS} =0V			± 10	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D = - 250 μA	- 1.2		- 3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = - 10V, I _D = - 0.2A			7.5	Ω
		V _{GS} = - 4.5V, I _D = - 0.025A			10	
On-State Drain Current	I _{D(ON)}	V _{DS} = - 10V, V _{GS} = - 10V	500			mA
Forward Transconductance	g _{FS}	V _{DS} = - 10V, I _D = - 0.1A	80			mS
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _D = - 200mA		- 0.75	- 1.4	V

Dynamic

Input Capacitance	C _{ISS}	V _{DS} = - 25V V _{GS} = 0V f= 1.0MHz		70		pF
Output Capacitance	C _{OSS}			11		
Reverse Transfer Capacitance	C _{RSS}			4		
Turn-On Delay Time	t _{D(ON)}	V _D = - 25V, I _D = - 120mA, V _{GS} = - 10V, R _{GEN} = 6 Ω,			40	ns
Rise Time	t _r			10		
Turn-Off Delay Time	t _{D(OFF)}				50	
Fall Time	t _f			15		

Notes:

- Surface Mounted on FR4 Board, t ≤ 10 sec.
- Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

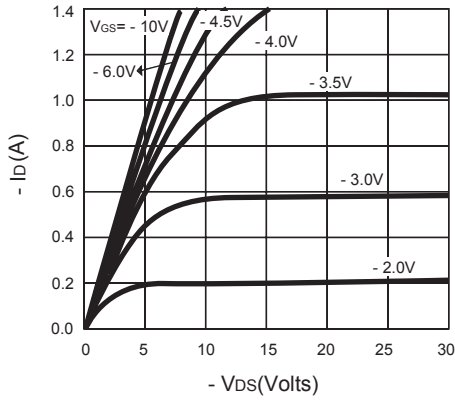


Figure 1. On-Regions Characteristics

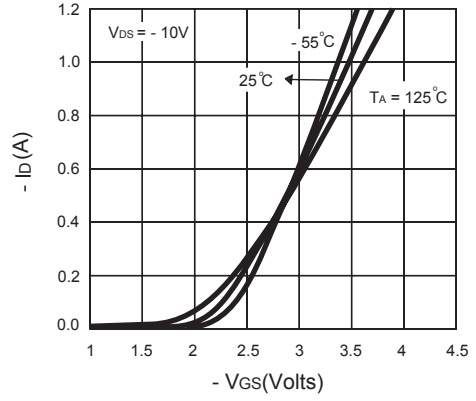


Figure 2. Transfer Characteristics

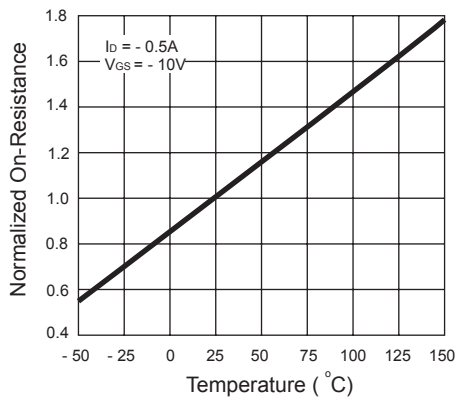


Figure 3. On-Resistance vs. Junction Temperature

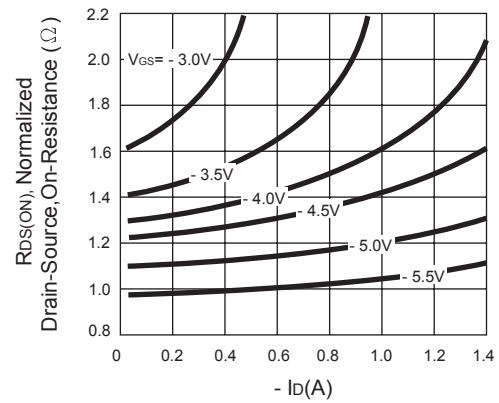


Figure 4. On-Resistance Variation with Drain Current and Gate Voltage.

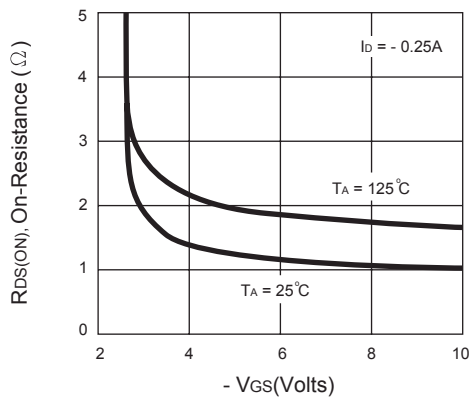


Figure 5. On-Resistance Variation with Gate-to-Source Voltage.

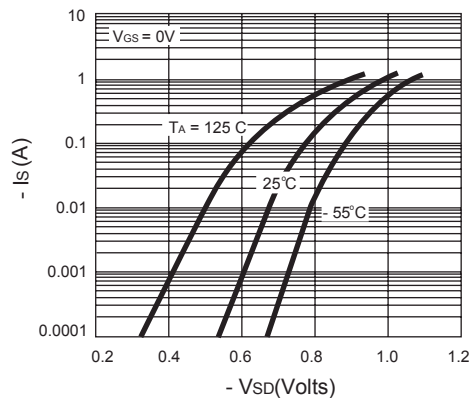


Figure 6. Body Diode Characteristics

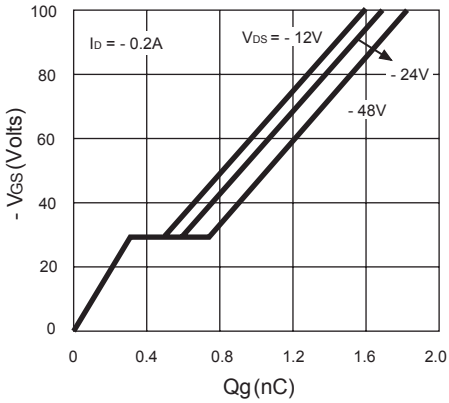


Figure 7. Gate-Charge Characteristics

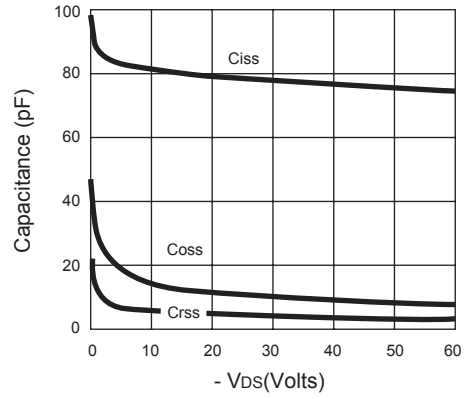


Figure 8. Capacitance Characteristics

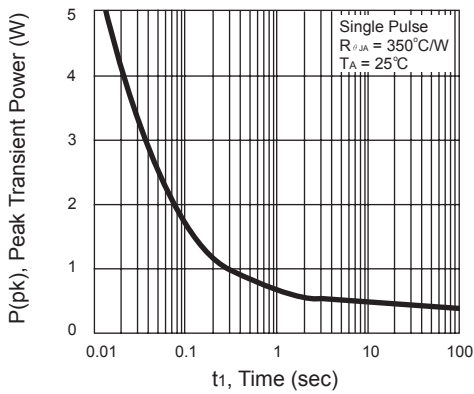


Figure 9. Single Pulse Maximum Power Dissipation

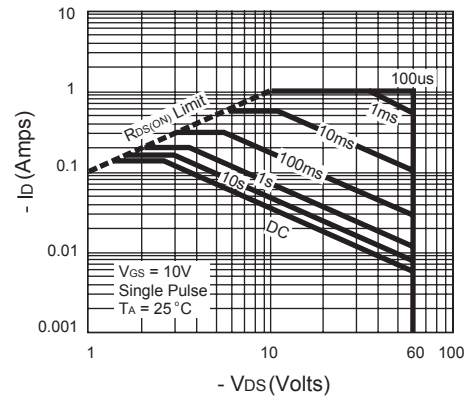


Figure 10. Maximum Forward Biased Safe Operating Area

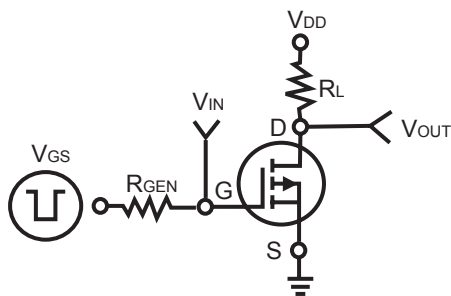


Figure 11. Switching Test Circuit

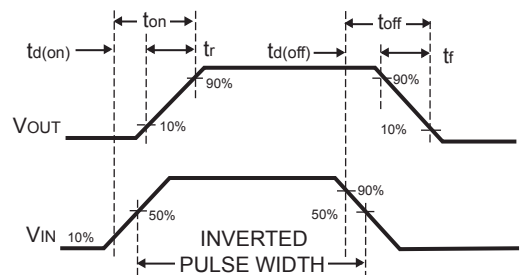


Figure 12. Switching Waveforms

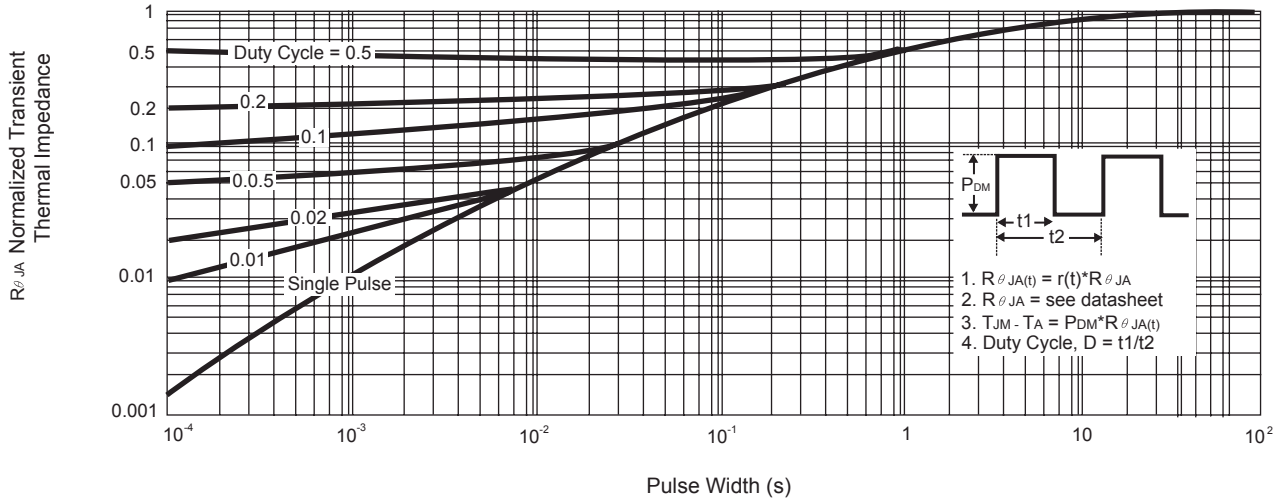


Figure 13. Normalized Maximum Transient Thermal Impedance