

P-Channel Enhancement MOSFET

Features

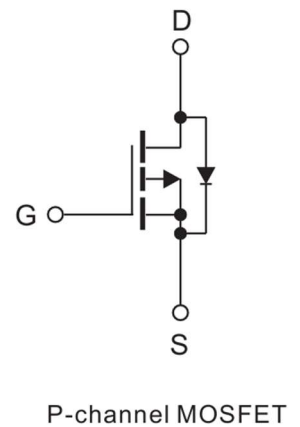
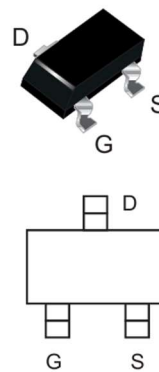
- Low Threshold Voltage
- Halogen-Free & Lead-Free

Product Summary			
V_{DS}	$R_{DS(on)}$ (m Ω) Typ	I_D (A)	Q_g (Typ)
-30V	42 @ -10V	-4.2	9.4nc
	53 @ -4.5V	-4	

Application

- Load Switch for Portable Devices
- Voltage controlled small signal switch

SOT-23



Absolute Maximum Ratings (at $T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	V_{DS}	-30	V	
Gate-Source Voltage	V_{GS}	± 12	V	
Continuous Drain Current	$T_A = 25^\circ\text{C}$	I_D	-4.2	A
	$T_A = 70^\circ\text{C}$	I_D	-3.5	A
Peak Drain Current, Pulsed ¹⁾	I_{DM}	-30	A	
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	1.4	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$	

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	104	$^\circ\text{C/W}$

Note:

1) Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$, limited by T_J max.

2) Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Characteristics at T_J = 25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at V _{GS} =0V, I _D =-250μA	BV _{DSS}	-30			V
Drain-Source Leakage Current at V _{DS} =-24V, V _{GS} =0V	I _{DSS}			-1	μA
Gate Leakage Current at V _{GS} =±12V, V _{DS} =0V	I _{GSS}			±100	nA
Gate-Source Threshold Voltage at V _{DS} =V _{GS} , I _D =-250μA	V _{GS(th)}	-0.4	-1	-1.3	V
Drain-Source On-State Resistance at V _{GS} = -10V, I _D = -4.2A at V _{GS} = -4.5V, I _D = -4A at V _{GS} = -2.5V, I _D = -1A	R _{DS(on)}		42 53 80	50 65 120	mΩ
DYNAMIC PARAMETERS					
Input Capacitance at V _{GS} =0V, V _{DS} =-15V, f=1MHz	C _{iss}		954		pF
Output Capacitance at V _{GS} =0V, V _{DS} =-15V, f=1MHz	C _{oss}		115		
Reverse Transfer Capacitance at V _{GS} =0V, V _{DS} =-15V, f=1MHz	C _{rss}		77		
Gate charge total at V _{DS} =-15V, V _{GS} =-4.5V, I _D =-4A	Q _g		9.4		nC
Gate to Source Charge at V _{DS} =-15V, V _{GS} =-4.5V, I _D =-4A	Q _{gs}		2		
Gate to Drain Charge at V _{DS} =-15V, V _{GS} =-4.5V, I _D =-4A	Q _{gd}		3		
Turn-On Delay Time at V _{DD} =-15V, V _{GS} =-10V, R _{GEN} =6Ω, R _L =3.6Ω	t _{d(on)}		6.3		nS
Turn-On Rise Time at V _{DD} =-15V, V _{GS} =-10V, R _{GEN} =6Ω, R _L =3.6Ω	t _r		3.2		
Turn-Off Delay Time at V _{DD} =-15V, V _{GS} =-10V, R _{GEN} =6Ω, R _L =3.6Ω	t _{d(off)}		38.3		
Turn-Off Fall Time at V _{DD} =-15V, V _{GS} =-10V, R _{GEN} =6Ω, R _L =3.6Ω	t _f		12		
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at I _S =-1A, V _{GS} =0V	V _{SD}		-0.75	-1	V
Maximum Body-Diode Continuous Current	I _S			-2.2	A

Electrical Characteristics Curves

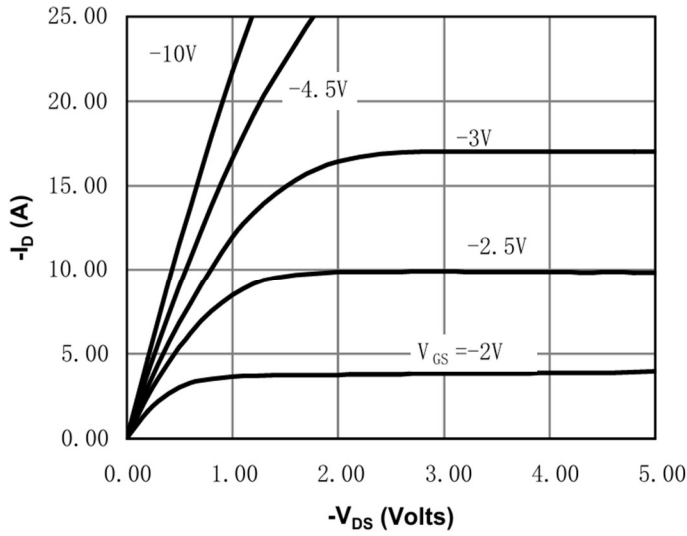


Fig 1: On-Region Characteristics

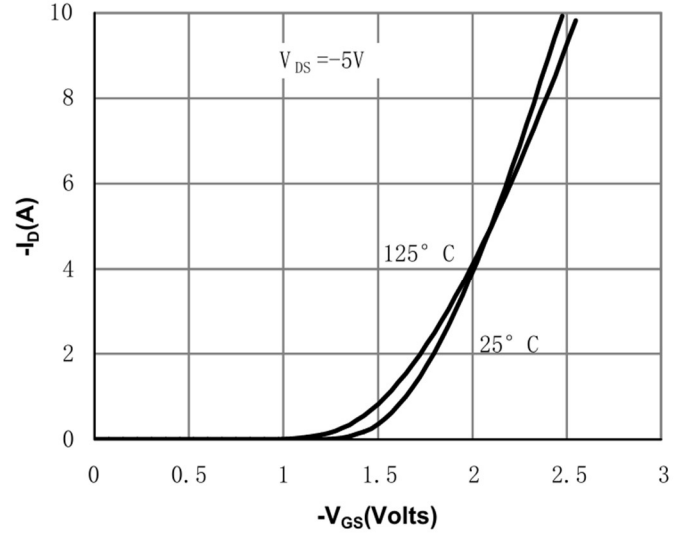


Figure 2: Transfer Characteristics

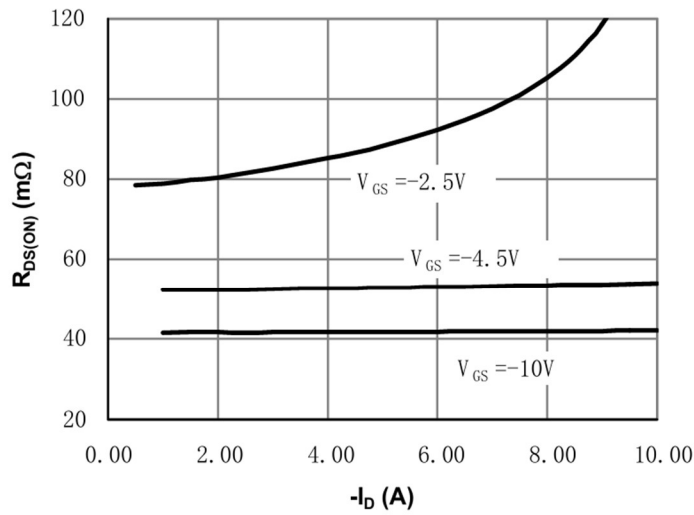


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

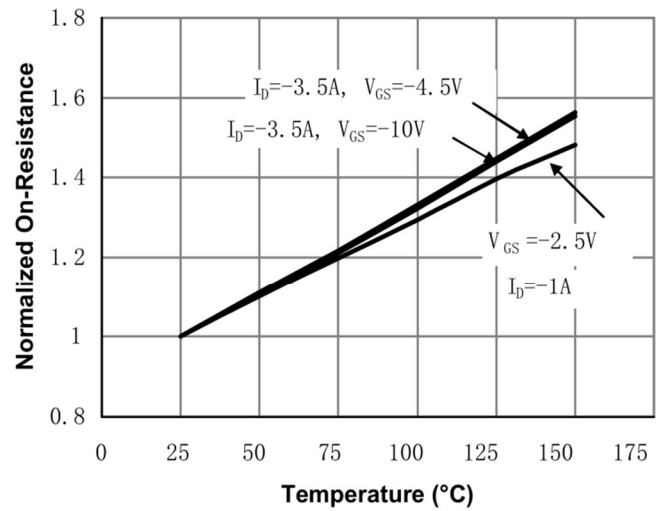


Figure 4: On-Resistance vs. Junction Temperature

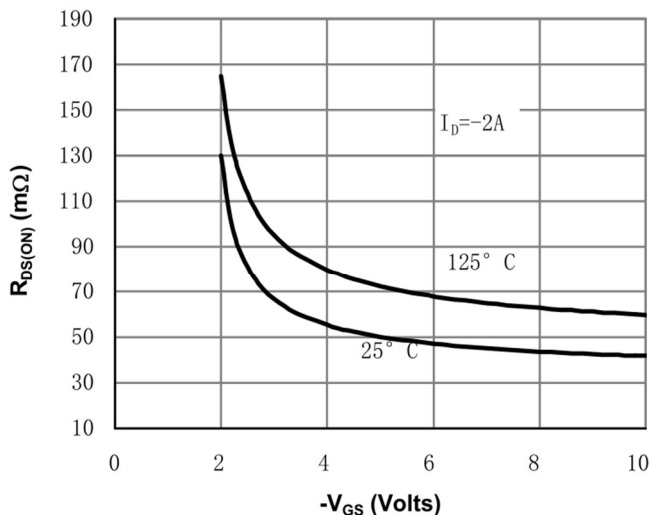


Figure 5: On-Resistance vs. Gate-Source Voltage

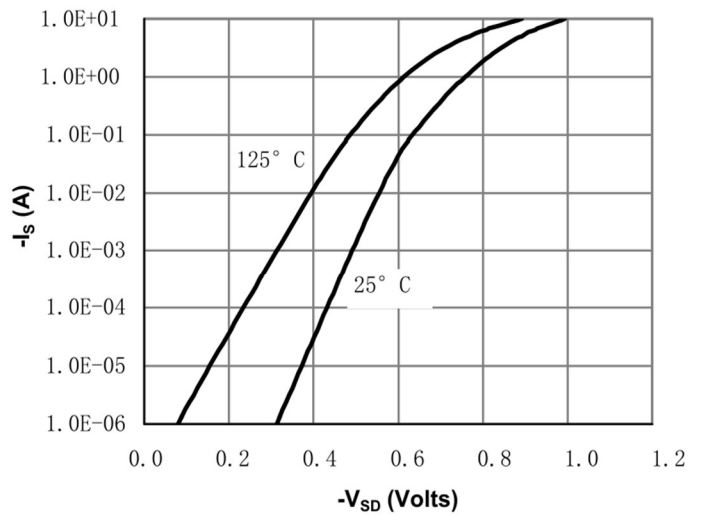


Figure 6: Body-Diode Characteristics

Electrical Characteristics Curves

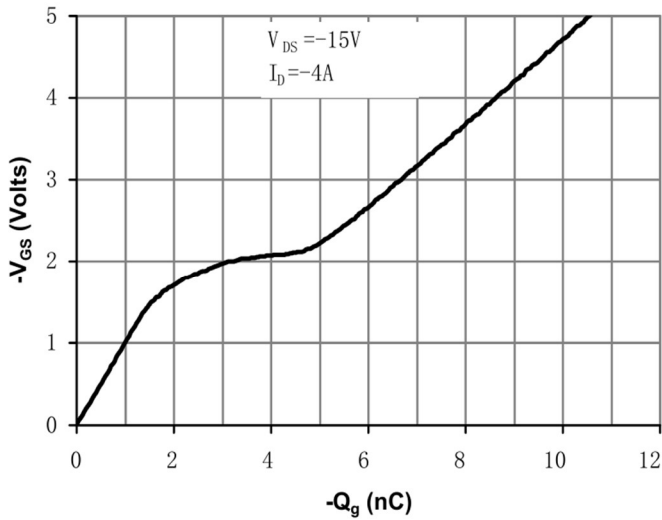


Figure 7: Gate-Charge Characteristics

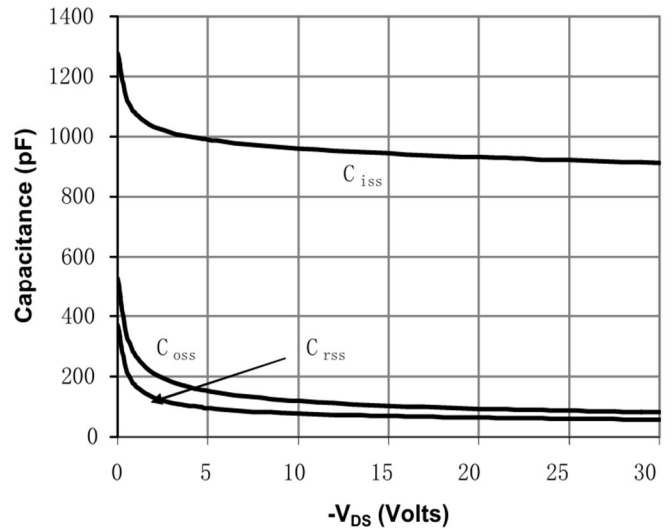


Figure 8: Capacitance Characteristics

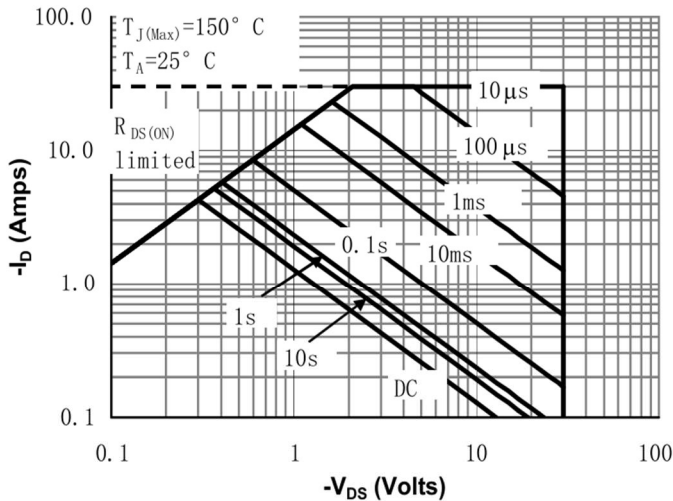


Figure 9: Maximum Forward Biased Safe Operating Area

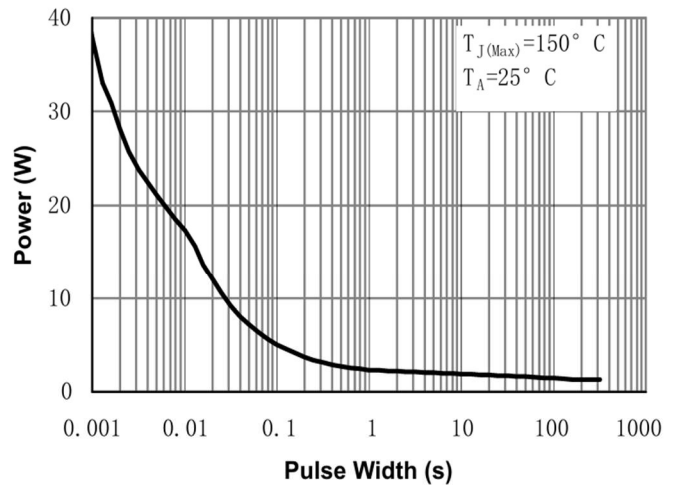


Figure 10: Single Pulse Power Rating Junction-to-Ambient

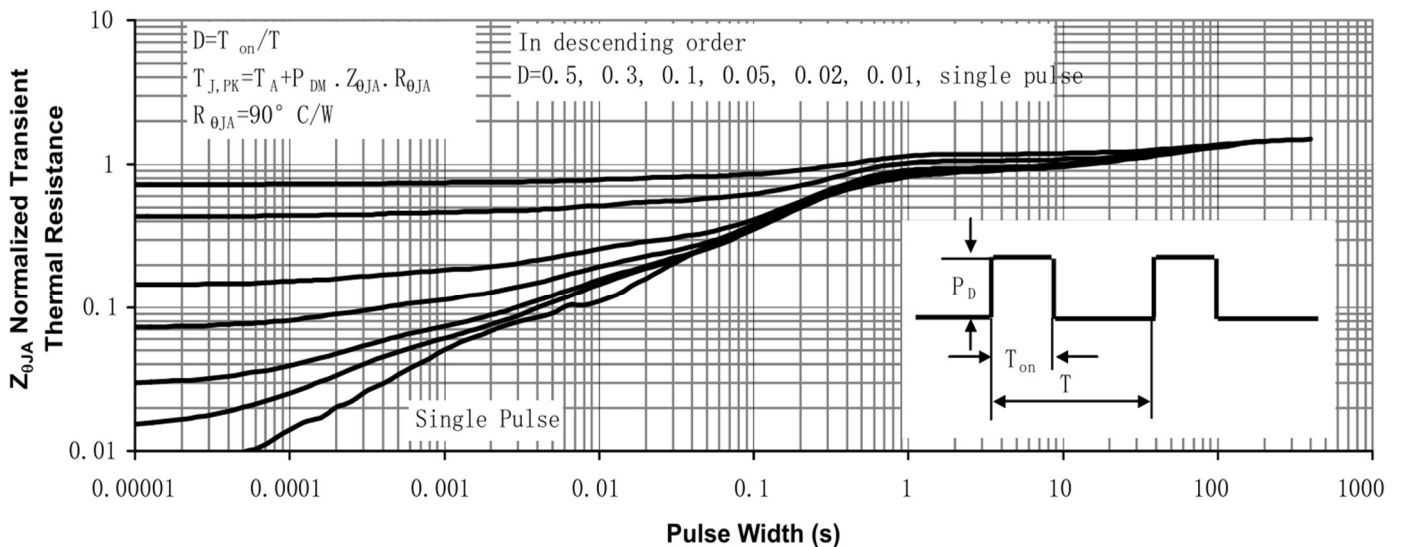
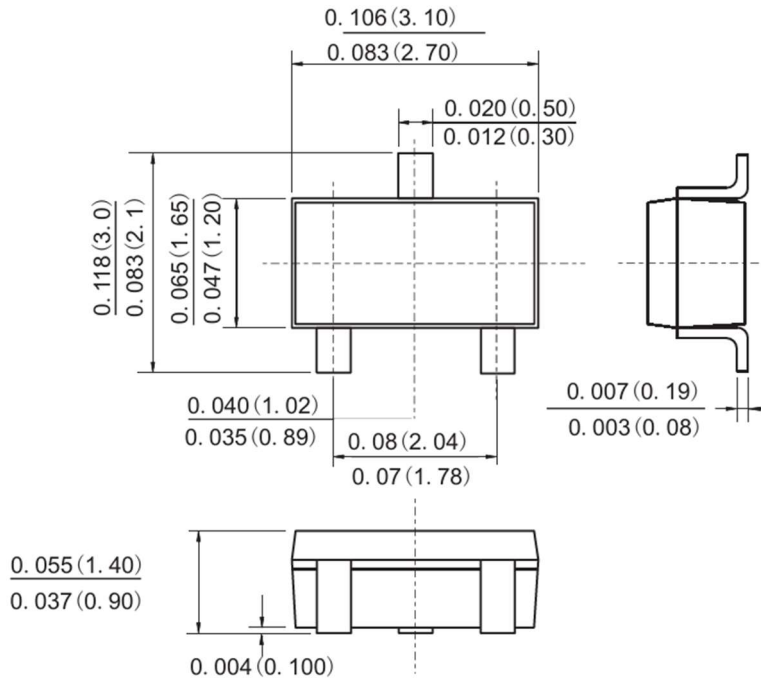


Figure 11: Normalized Maximum Transient Thermal Impedance

Order Information

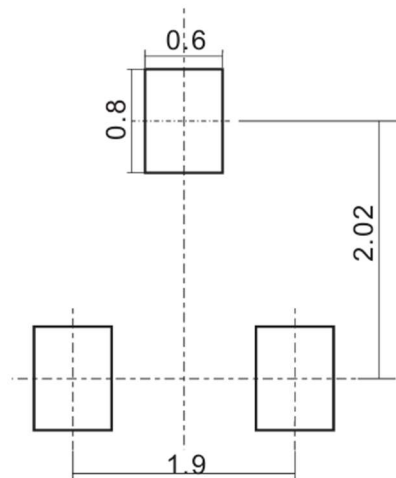
Part Number	Package	Marking	Quantity
Sh3401	SOT-23	3401	3000

Package Outline Dimensions (Units: mm) SOT-23



Dimensions in inches and (millimeters)

Suggested Pad Layout



Dimensions in millimeters