

P-Channel 30-V (D-S) MOSFET

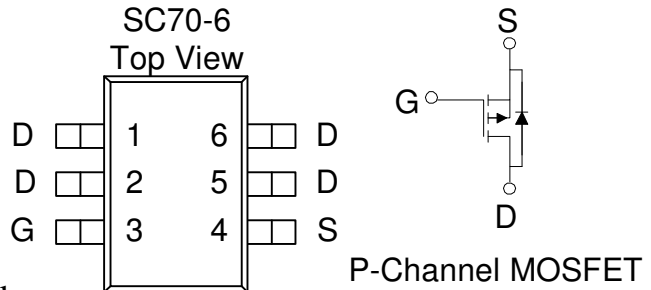
These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe SC70-6 saves board space
- Fast switching speed
- High performance trench technology



Protected

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (OHM)	I_D (A)
-30	0.064 @ $V_{GS} = -10V$	-4.1
	0.096 @ $V_{GS} = -4.5V$	-3.3



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	I_D	$T_A = 25^\circ C$	-4.1
		$T_A = 70^\circ C$	-3.3
Pulsed Drain Current ^b	I_{DM}	-10	A
Continuous Source Current (Diode Conduction) ^a	I_S	± 1.4	A
Power Dissipation ^a	P_D	$T_A = 25^\circ C$	1.56
		$T_A = 70^\circ C$	0.81
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ C$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	R_{THJA}	$t \leq 5$ sec	80
		Steady-State	125

Notes

- a. Surface Mounted on 1" x 1" FR4 Board.
- b. Pulse width limited by maximum junction temperature

SPECIFICATIONS (T _A = 25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 uA	-1			V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±10	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -24 V, V _{GS} = 0 V, T _J = 55°C			-10	
On-State Drain Current ^A	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -4.5 V	-5			A
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = -10 V, I _D = -1 A			64	mΩ
		V _{GS} = -4.5 V, I _D = -1 A			96	
Forward Transconductance ^A	g _s	V _{DS} = -5 V, I _D = -1 A		9		S
Diode Forward Voltage	V _{SD}	I _S = -0.46 A, V _{GS} = 0 V		-0.65		V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = -10 V, V _{GS} = -4.5 V, I _D = -1 A		4		nC
Gate-Source Charge	Q _{gs}			1		
Gate-Drain Charge	Q _{gd}			2		
Turn-On Delay Time	t _{d(on)}	V _{DD} = -10 V, I _L = -1 A, V _{GEN} = -4.5 V, R _G = 6 Ω		9		ns
Rise Time	t _r			4		
Turn-Off Delay Time	t _{d(off)}			1		
Fall-Time	t _f			2		

Notes

- a. Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.
- c. Repetitive rating, pulse width limited by junction temperature.

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