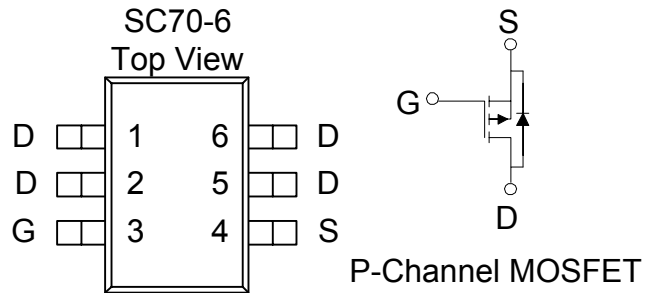


**P-Channel 20-V (D-S) MOSFET**

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

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ (OHM)	$I_D$ (A)
-20	0.079 @ $V_{GS} = -4.5V$	-3.7
	0.110 @ $V_{GS} = -2.5V$	-3.1



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	
Continuous Drain Current <sup>a</sup>	$I_D$	$T_A = 25^\circ C$	-3.7
		$T_A = 70^\circ C$	-3.0
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	-10	A
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	$\pm 1.4$	A
Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ C$	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 <sup>a</sup>	$R_{\theta JA}$	$t \leq 5$ sec	80
		Steady-State	125

Notes

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

SPECIFICATIONS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
<b>Static</b>						
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-0.4			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 8 \text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}$			-1	uA
		$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			-10	
On-State Drain Current <sup>A</sup>	$I_{D(on)}$	$V_{DS} = -5 \text{ V}, V_{GS} = -4.5 \text{ V}$	-5			A
Drain-Source On-Resistance <sup>A</sup>	$r_{DS(on)}$	$V_{GS} = -4.5 \text{ V}, I_D = -3.7 \text{ A}$			79	m $\Omega$
		$V_{GS} = -2.5 \text{ V}, I_D = -3.1 \text{ A}$			110	
Forward Transconductance <sup>A</sup>	$g_{fs}$	$V_{DS} = -5 \text{ V}, I_D = -1.25 \text{ A}$		9		S
Diode Forward Voltage	$V_{SD}$	$I_S = -0.46 \text{ A}, V_{GS} = 0 \text{ V}$		-0.65		V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = -10 \text{ V}, V_{GS} = -4.5 \text{ V},$ $I_D = -3.7 \text{ A}$		7.2		nC
Gate-Source Charge	$Q_{gs}$			1.7		
Gate-Drain Charge	$Q_{gd}$			1.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10 \text{ V}, I_L = -1 \text{ A},$ $V_{GEN} = -4.5 \text{ V}, R_G = 6 \Omega$		10		ns
Rise Time	$t_r$			9		
Turn-Off Delay Time	$t_{d(off)}$			27		
Fall-Time	$t_f$			11		

## Notes

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

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