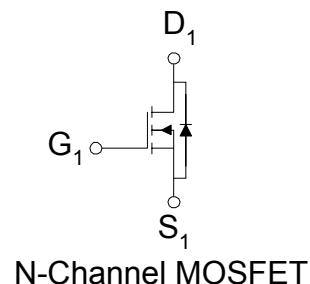
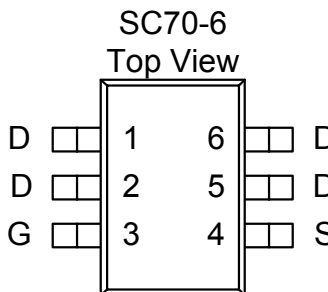


### N-Channel 40V (D-S) MOSFET

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.

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
40	0.086 @ $V_{GS} = 10\text{ V}$	3.5
	0.128 @ $V_{GS} = 4.5\text{ V}$	2.9

- 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



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	40	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>a</sup>	$I_D$	$T_A = 25^\circ\text{C}$	3.5
		$T_A = 70^\circ\text{C}$	2.9
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	$\pm 20$	A
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	1.6	
Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ\text{C}$	1.56
		$T_A = 70^\circ\text{C}$	0.81
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient <sup>a</sup>	$R_{THJA}$	$t \leq 5\text{ sec}$	100
		Steady-State	166

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- 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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	1			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\ \text{V}, V_{GS} = \pm 20\ \text{V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 32\ \text{V}, V_{GS} = 0\ \text{V}$			1	uA
		$V_{DS} = 32\ \text{V}, V_{GS} = 0\ \text{V}, T_J = 55^\circ\text{C}$			10	
On-State Drain Current <sup>A</sup>	$I_{D(on)}$	$V_{DS} = 5\ \text{V}, V_{GS} = 4.5\ \text{V}$	10			A
Drain-Source On-Resistance <sup>A</sup>	$r_{DS(on)}$	$V_{GS} = 10\ \text{V}, I_D = 3.5\ \text{A}$			86	m $\Omega$
		$V_{GS} = 4.5\ \text{V}, I_D = 2.9\ \text{A}$			128	
Forward Transconductance <sup>A</sup>	$g_s$	$V_{DS} = 10\ \text{V}, I_D = 3.5\ \text{A}$		11.3		S
Diode Forward Voltage	$V_{SD}$	$I_S = 1.6\ \text{A}, V_{GS} = 0\ \text{V}$		0.75		V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = 10\ \text{V}, V_{GS} = 4.5\ \text{V}, I_D = 3.5\ \text{A}$		7.5		nC
Gate-Source Charge	$Q_{gs}$			0.6		
Gate-Drain Charge	$Q_{gd}$			1.0		
Input Capacitance	$C_{iss}$	$V_{DS} = 15\ \text{V}, V_{GS} = 0\ \text{V},$ $= 1\ \text{MHz}$	f	720		pF
Output Capacitance	$C_{oss}$			165		
Reverse Transfer Capacitance	$C_{rss}$			60		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10\ \text{V}, R_L = 15\ \Omega, I_D = 1\ \text{A},$ $V_{GEN} = 4.5\ \text{V}$		8		ns
Rise Time	$t_r$			24		
Turn-Off Delay Time	$t_{d(off)}$			35		
Fall Time	$t_f$			10		

## Notes

- Pulse test:  $PW \leq 300\ \mu\text{s}$  duty cycle  $\leq 2\%$ .
- Guaranteed by design, not subject to production testing.

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