

-30V P-Channel Enhancement Mode MOSFET

V_{DS} = -30V

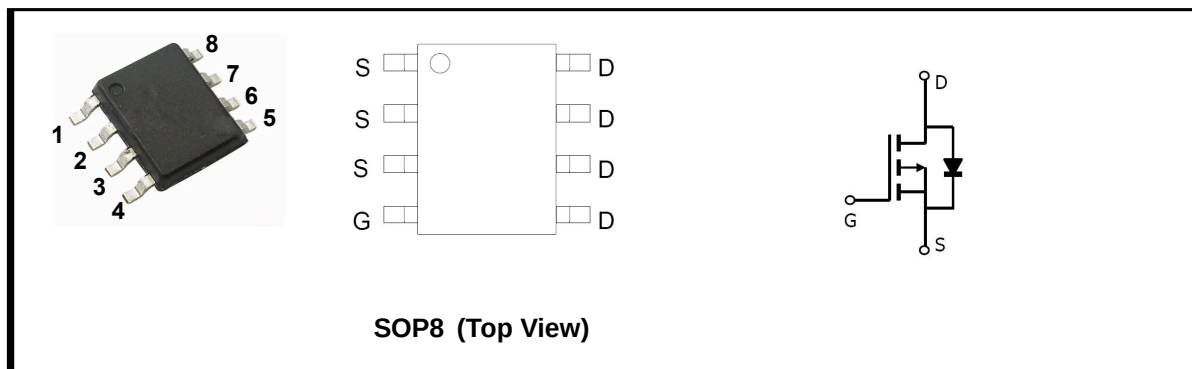
R_{DS(ON)}, V_{gs}@ -10.0V, I_{ds}@ -10.0A < 14.0mΩ

R_{DS(ON)}, V_{gs}@ -4.5V, I_{ds}@ -10.0A < 24.0mΩ

Features

Advanced trench process technology

High Density Cell Design For Ultra Low On-Resistance



Maximum Ratings and Thermal Characteristics (T_A = 25°C unless otherwise noted)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DSS}	-30	V
Gate-Source Voltage		V _{GSS}	±25	V
Continuous Drain Current		I _D (T _a =25°C)	-14	A
Pulsed Drain Current		I _{DM}	-56	A
Power Dissipation for Single Operation		P _D (T _a =25°C)	3.1	W
Maximum Junction Temperature		T _J	150	°C
Storage Temperature Range		T _{stg}	-55 ~ 150	°C
Thermal Resistance-Junction to Ambient	t ≤ 10s	R _{θJA}	40	°C/W
Thermal Resistance-Junction to Ambient	Steady-State		75	°C/W
Maximum Junction-to-Lead	Steady-State	R _{θJL}	24	°C/W

Model	Marking	Package	shipping
M4407SC	4407	SOP8	4000/Tape&Reel

CHANNEL Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = -250\mu A$ $V_{GS} = 0V$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24V$ $V_{GS} = 0V$			-1.0	μA
Gate-Body leakage current	I_{GSS}	$V_{DS} = 0V$ $V_{GS} = \pm 25V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$ $I_D = -250\mu A$	-1.0	-1.5	-3.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = -10V$ $I_D = -10A$		11	14	m Ω
		$V_{GS} = -4.5V$ $I_D = -10A$		14	24	
Diode Forward Voltage	V_{SD}	$I_S = -1A$ $V_{GS} = 0V$			-1.0	V
Total Gate Charge	$Q_{g(10V)}$	$V_{GS} = -10V$ $V_{DS} = -15V$ $I_D = -14A$		35		nC
Total Gate Charge	$Q_{g(4.5V)}$			17		
Gate-Source Charge	Q_{gs}			5.7		
Gate-Drain Charge	Q_{gd}			8.8		
Gate Resistance	R_g	$V_{GS} = 0V$ $V_{DS} = 0V$ $f = 1MHz$		7		Ω
Input Capacitance	C_{iss}	$V_{GS} = 0V$ $V_{DS} = -25V$ $f = 1MHz$		2210		pF
Output Capacitance	C_{oss}			150		
Reverse Transfer Capacitance	C_{rss}			255		
Turn-on Delay Time	$t_{d(ON)}$	$V_{GS} = -10V$ $V_{DS} = -15V$ $R_L = 1.25\Omega$ $R_{GEN} = 3\Omega$		11		ns
Turn-on Rise Time	t_r			7.5		
Turn-off Delay Time	$t_{d(OFF)}$			43.5		
Turn-off Fall Time	t_f			17.5		

Notes:

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

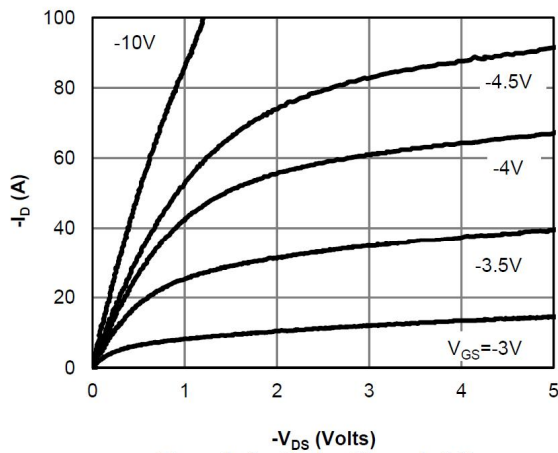
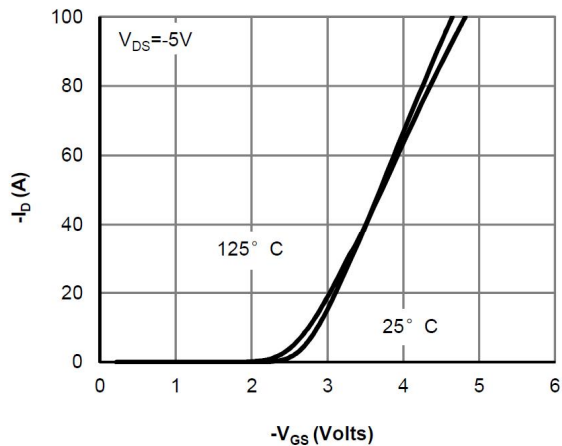
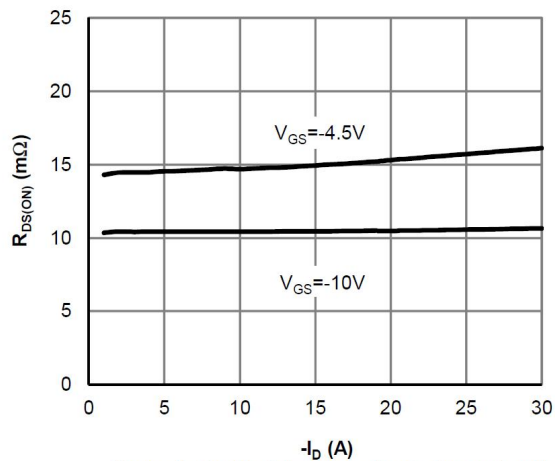
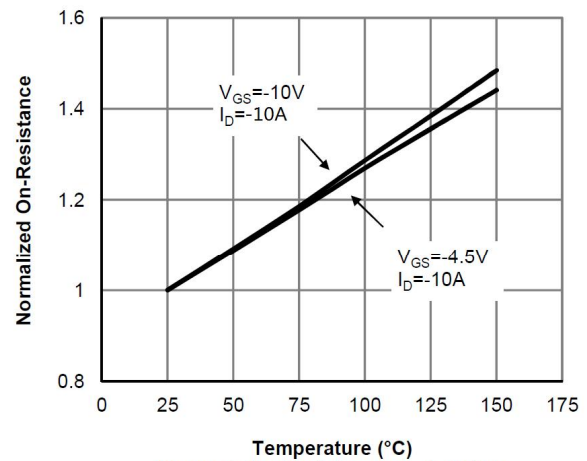
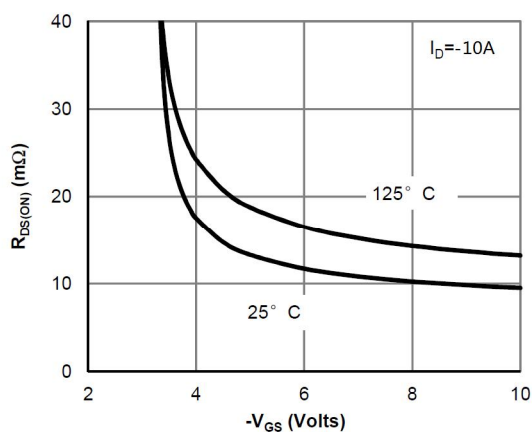
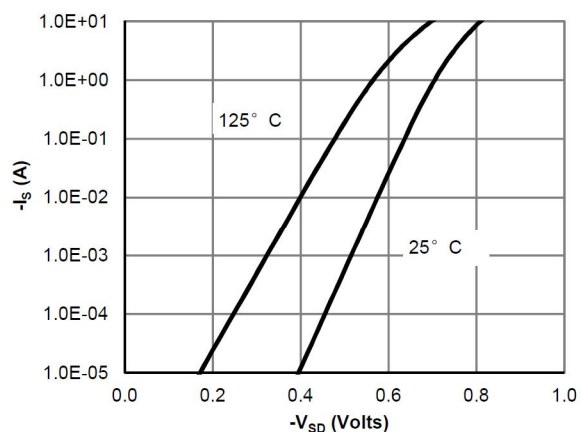
C. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

D. The static characteristics in Figures 1 to 6 are obtained using $t \leq 300\mu s$ pulses, duty cycle 0.5% max.

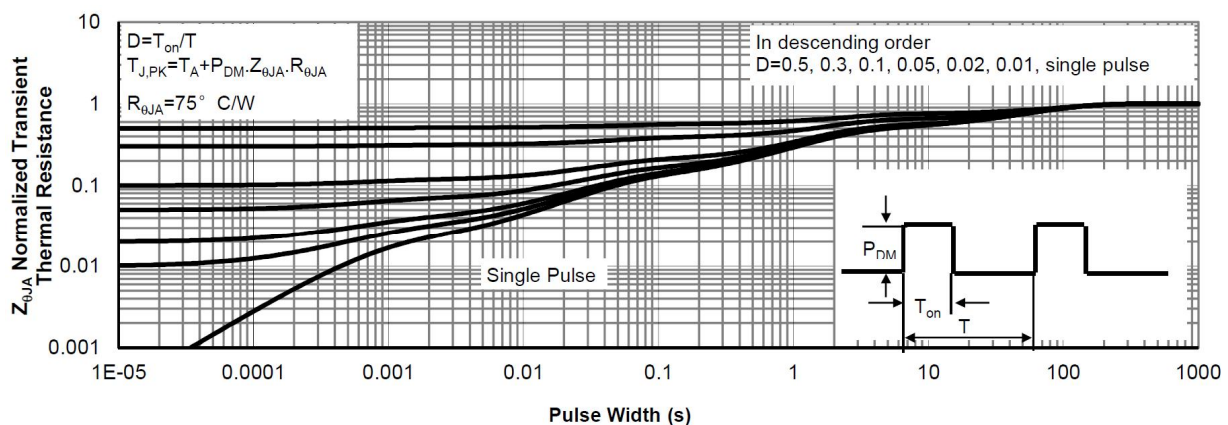
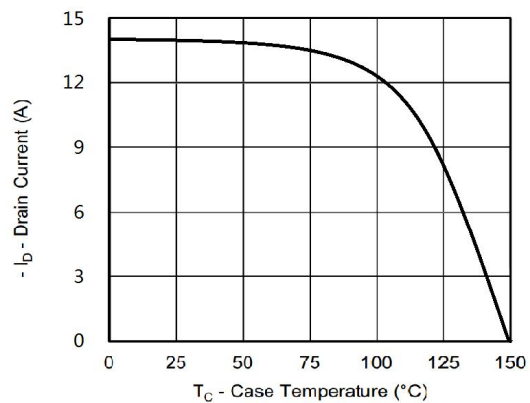
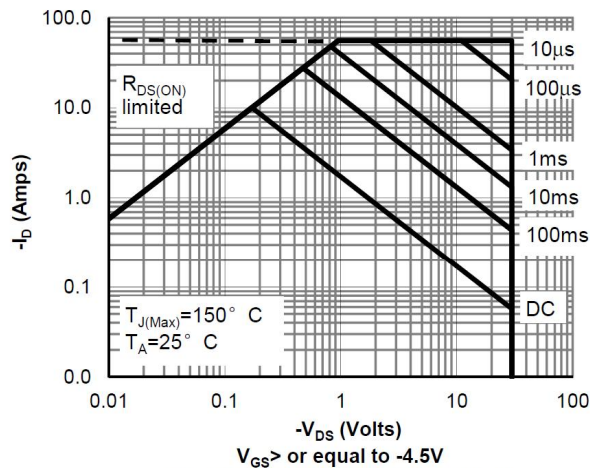
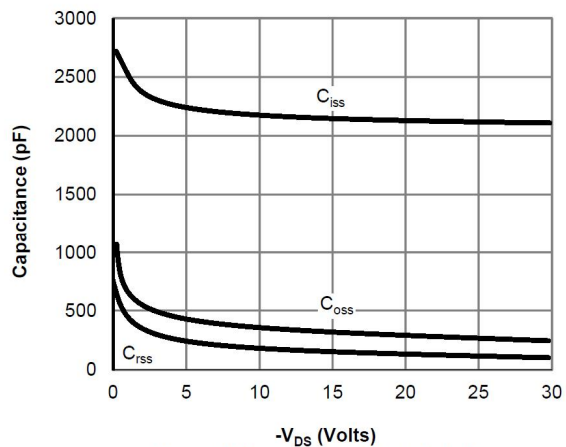
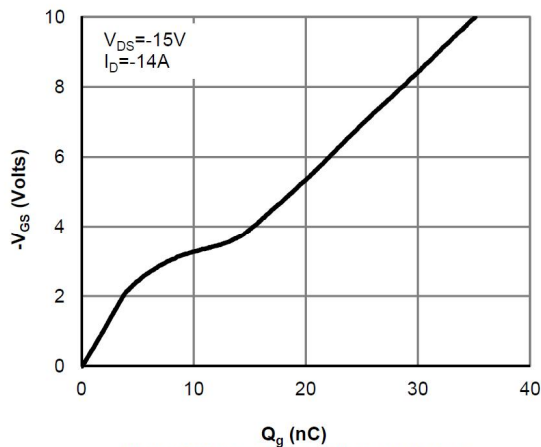
E. These tests are performed with the device mounted on 1 in2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$. The SOA curve provides a single pulse rating.

F. The current rating is based on the $t \leq 10s$ thermal resistance rating.

G. E_{AR} and I_{AR} ratings are based on low frequency and duty cycles to keep $T_j = 25^\circ C$.

P-CHANNEL Electrical Characteristic Curve

Figure 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

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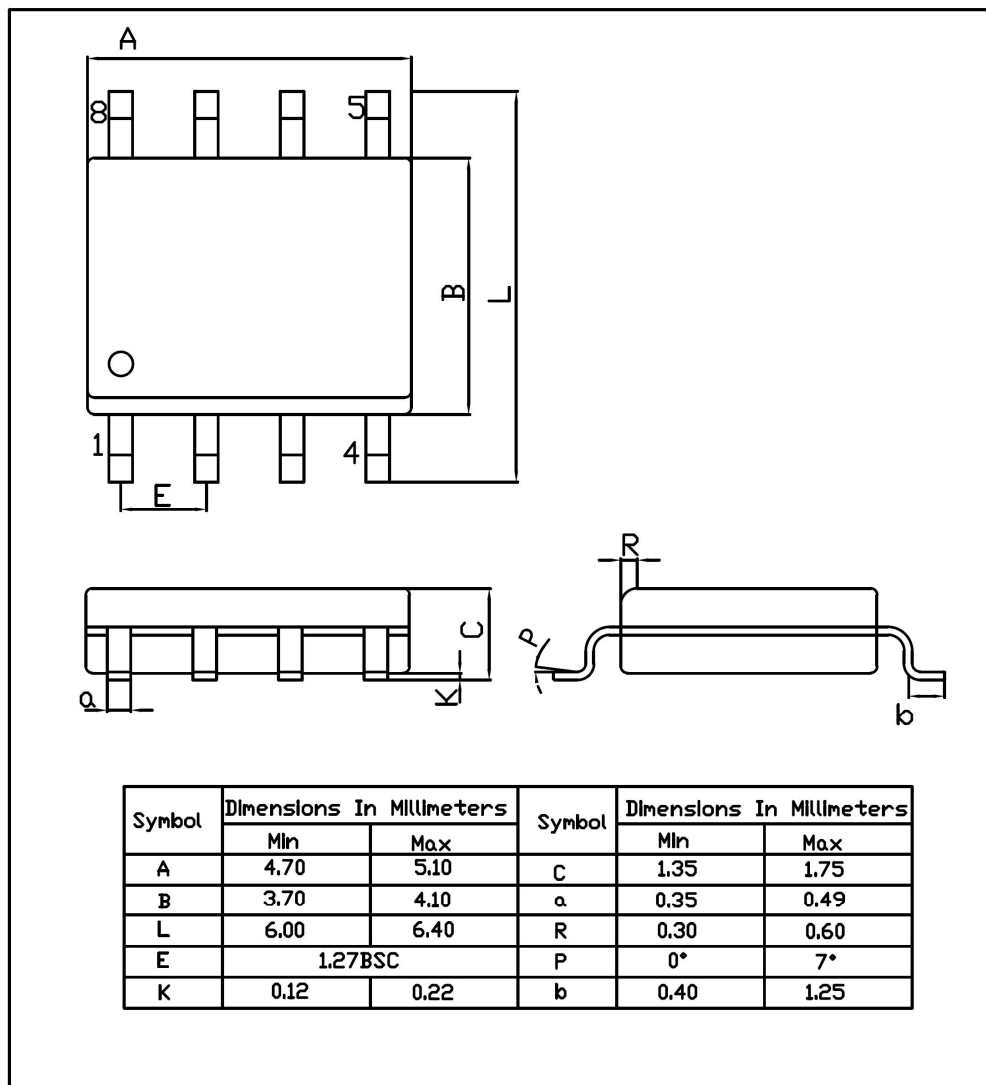


Dimension outline

Unit:mm

SOP-8

Unit:mm



Suggested Pad Layout UNIT: mm

