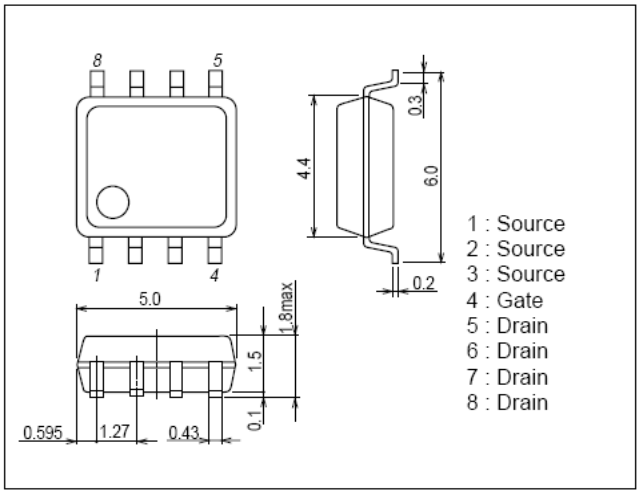
Si4407

Features

- Low On resistance.
- −4.5V drive.
- RoHS compliant.

Package Dimensions

unit : mm
SOP-8



Specifications

Absolute Maximum Ratings at T_a=25^{0}C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		-30	V
Gate-to-Source Voltage	V_{GSS}		±25	V
Drain Current (DC)	I_D		-9.2	A
Drain Current (Pulse)	I_{DP}	PW≤10uS, duty cycle≤1%	-60	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (1000mm^2×0.8mm) 1unit	1.3	W
Total Dissipation	P_T	Mounted on a ceramic board (1000mm^2×0.8mm)	1.7	W
Channel Temperature	T_{ch}		150	^{0}C
Storage Temperature	T_{stg}		-55~+150	^{0}C

Electrical Characteristics at T_a=25^{0}C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=-250uA, V_{GS}=0V	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V			-10	uA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±25V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250uA	-1.7	-2.3	-3.0	V
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-10A		21		S
Static Drain-to-Source On-State Resistance	$R_{DS(ON)}$	I_D=-12A, V_{GS}=-10V		10	13	mΩ
	$R_{DS(ON)}$	I_D=-10A, V_{GS}=-5V		27	38	mΩ
Input Capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=0V, f=1MHz		2060	2600	pF
Output Capacitance	C_{oss}	V_{DS}=-15V, V_{GS}=0V, f=1MHz		370		pF
Reverse Transfer Capacitance	C_{rss}	V_{DS}=-15V, V_{GS}=0V, f=1MHz		295		pF

Electrical Characteristics at T_a=25^{0}C (Continued)

Parameter	Symbol	Conditions	Ratings			Unit
			min	Typ	max	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=-10V, V_{DS}=-15V, R_L=1.25Ω, R_{GEN}=3Ω		11		nS
Rise Time	t_r			9.4		nS
Turn-off Delay Time	$t_{d(off)}$			24		nS
Fall Time	t_f			12		nS
Total Gate Charge	Q_g	V_{DS}=-10V, V_{GS}=-15V, I_D=-12A		30	39	nC
Gate-to-Source Charge	Q_{gs}			4.6		nC
Gate-to-Drain “Miller” Charge	Q_{gd}			10		nC
Diode Forward Voltage	V_{SD}	I_S=-1A, V_{GS}=0V		-0.7	-1.0	V

Typical Characteristics at T_a=25^{0}C

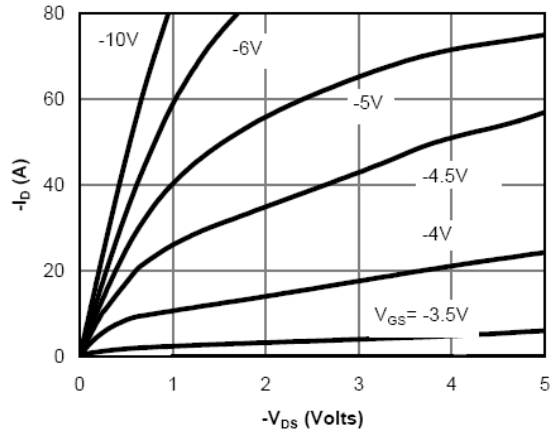


Figure 1: On-Region Characteristics

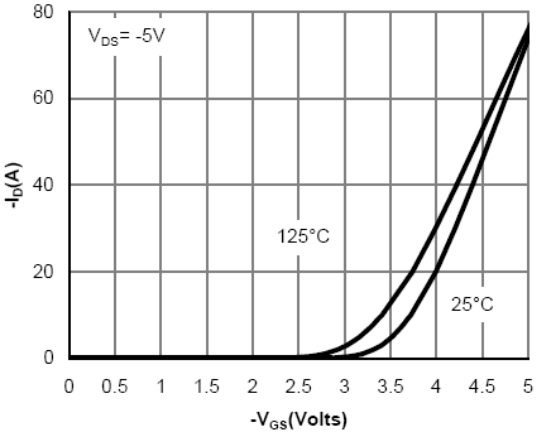


Figure 2: Transfer Characteristics

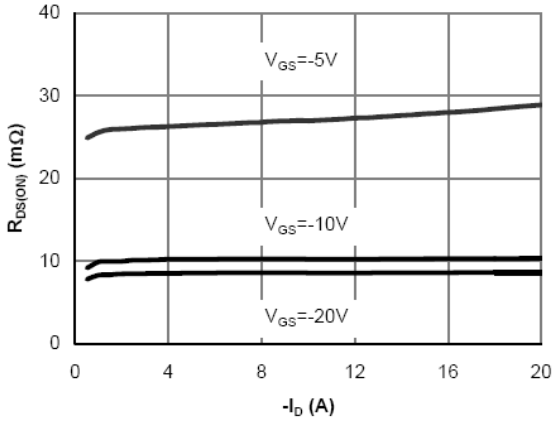


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

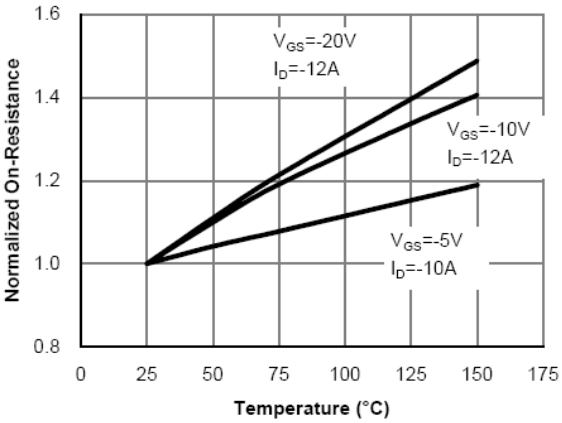


Figure 4: On-Resistance vs. Junction Temperature

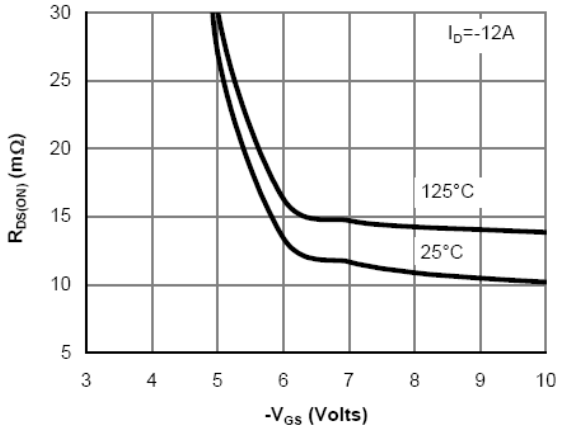


Figure 5: On-Resistance vs. Gate-Source Voltage

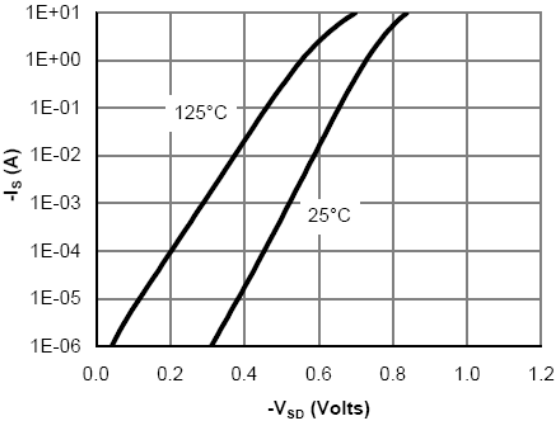


Figure 6: Body-Diode Characteristics

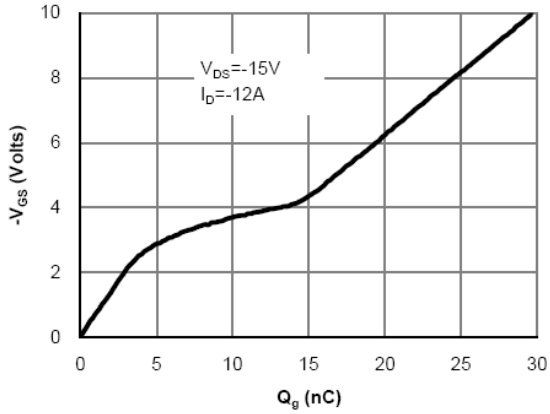


Figure 7: Gate-Charge Characteristics

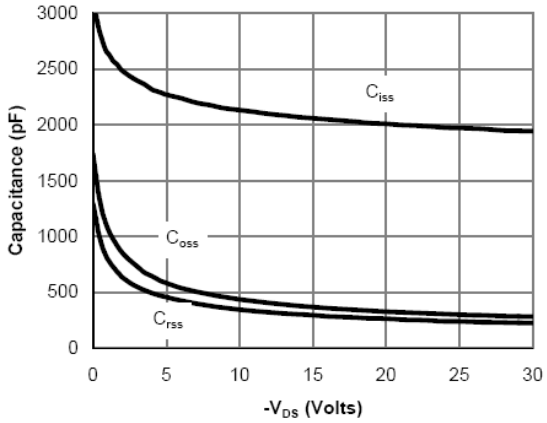


Figure 8: Capacitance Characteristics

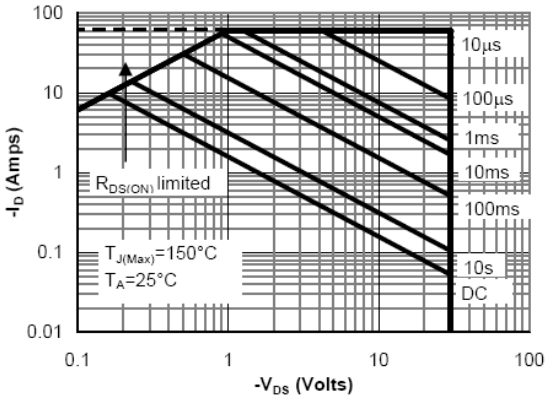


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

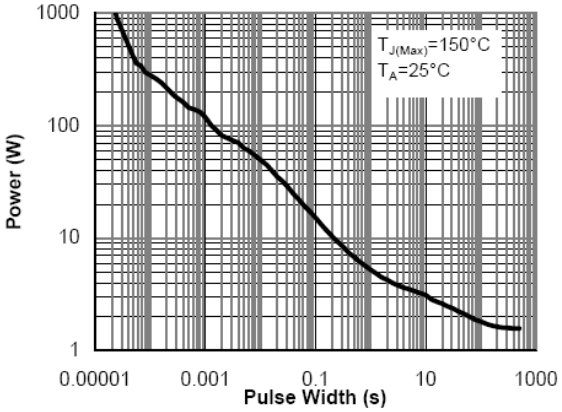


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

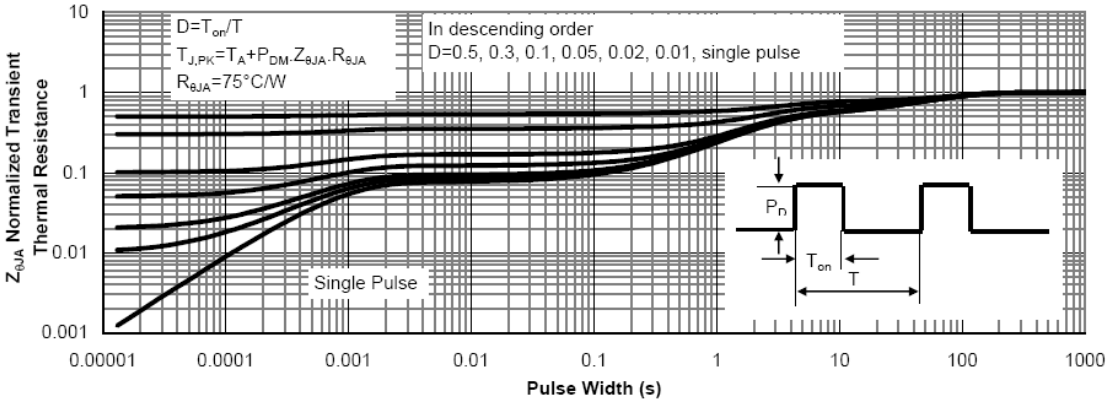


Figure 11: Normalized Maximum Transient Thermal Impedance(Note E)