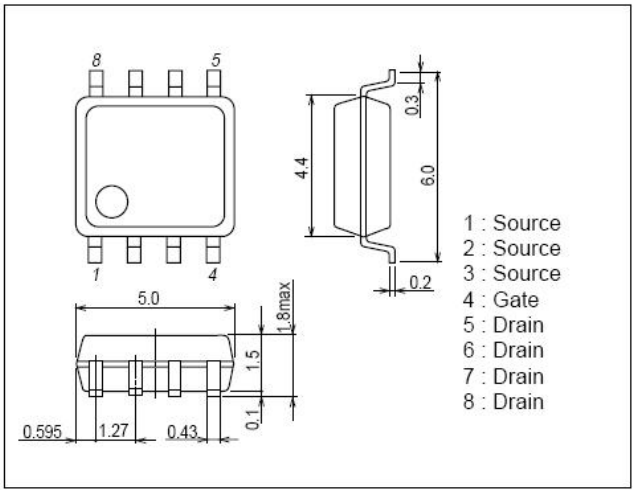
Si4437

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}		-20	V
Gate-to-Source Voltage	V_{GSS}		±8	V
Drain Current (DC)	I_D		-10.7	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	1.5	W
Total Dissipation	P_T	Mounted on a ceramic board (1000mm^2×0.8mm)	0.94	W
Channel Temperature	T_{ch}		150	^{0}C
Storage Temperature	T_{stg}		-55~+150	^{0}C

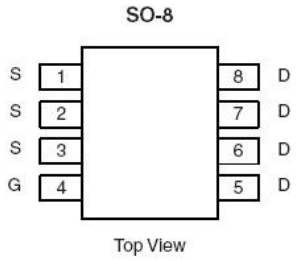
Electrical Characteristics at T_a=25^{0}C

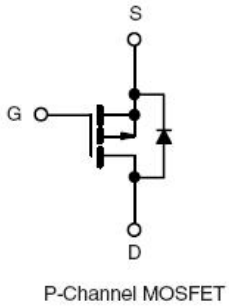
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=-250uA, V_{GS}=0V	-20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	uA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250uA	-0.3	-	-1.0	V
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-10A		43		S
Static Drain-to-Source On-State Resistance	$R_{DS(ON)}$	I_D=-10A, V_{GS}=-4.5V		9	11.5	mΩ
	$R_{DS(ON)}$	I_D=-8A, V_{GS}=-2.5V		11.5	15	mΩ
Input Capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=0V, f=1MHz		5783		pF
Output Capacitance	C_{oss}	V_{DS}=-15V, V_{GS}=0V, f=1MHz		509		pF
Reverse Transfer Capacitance	C_{rss}	V_{DS}=-15V, V_{GS}=0V, f=1MHz		431		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}=-4.5V, V_{DS}=-10V, I_D=-10A, R_{GEN}=3.3Ω		15.8		nS
Rise Time	t_r			76.8		nS
Turn-off Delay Time	$t_{d(off)}$			193		nS
Fall Time	t_f			186.4		nS
Total Gate Charge	Q_g	V_{DS}=-15V, V_{GS}=-4.5V, I_D=-10A		63		nC
Gate-to-Source Charge	Q_{gs}			9.1		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			13		nC
Diode Forward Voltage	V_{SD}	I_S=-1A, V_{GS}=0V			-1.2	V

Pin Desctiption





Typical Characteristics at T_a=25^{0}C

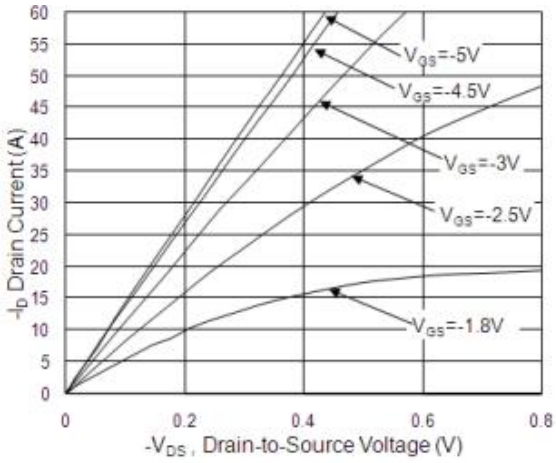


Fig.1 Typical Output Characteristics

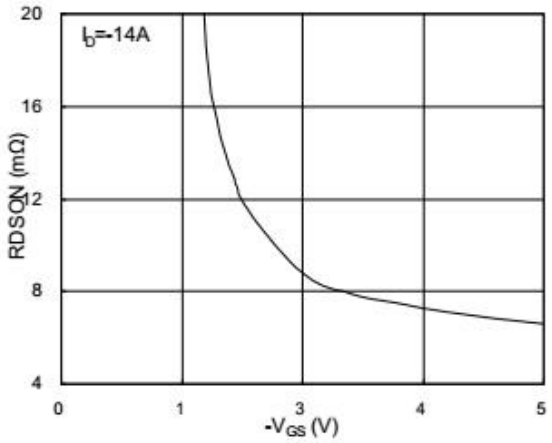


Fig.2 On-Resistance vs. G-S Voltage

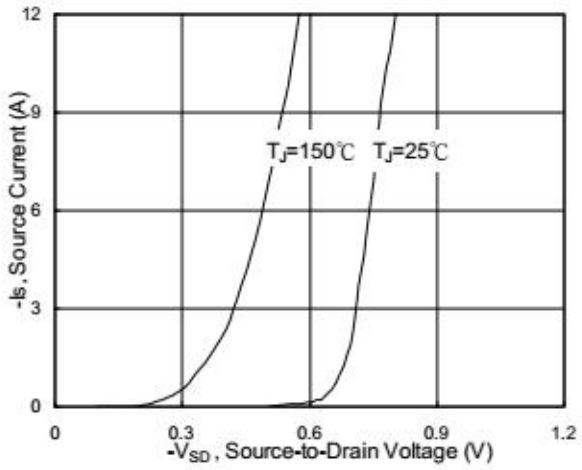


Fig.3 Forward Characteristics of Reverse

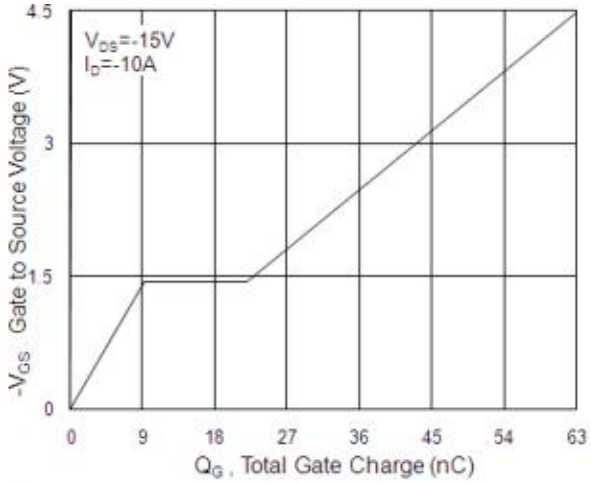


Fig.4 Gate-charge Characteristics

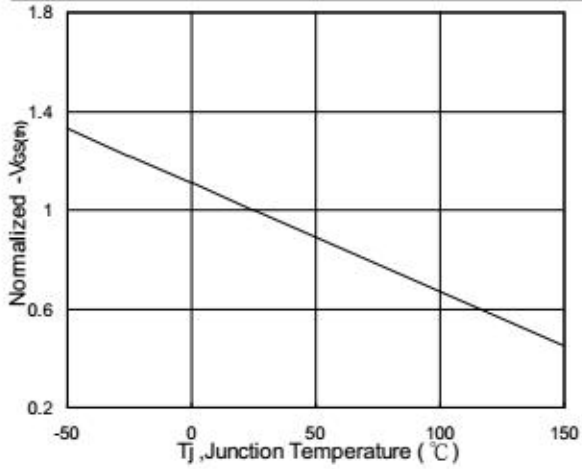


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

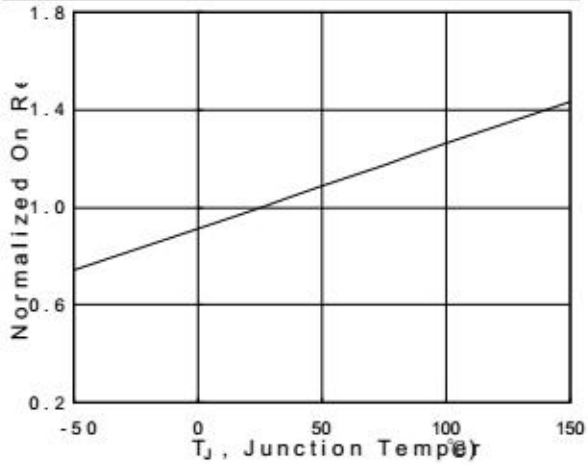


Fig.6 Normalized R_{DSON} vs. T_J

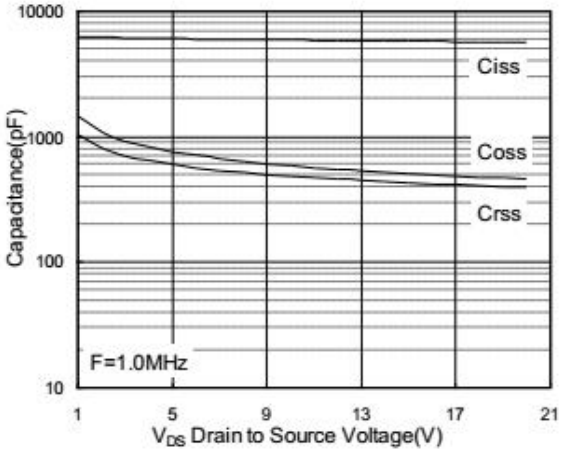


Fig.7 Capacitance

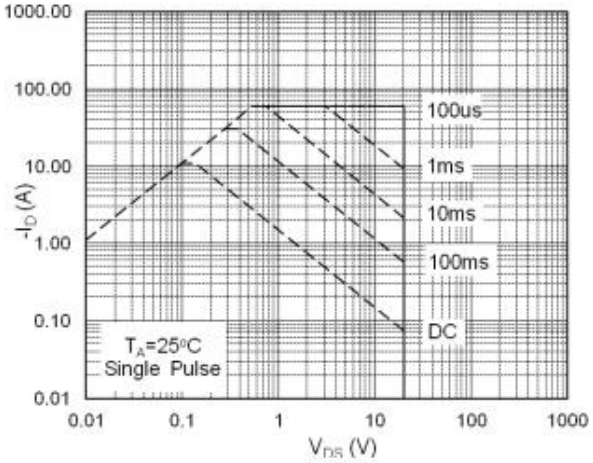


Fig.8 Safe Operating Area

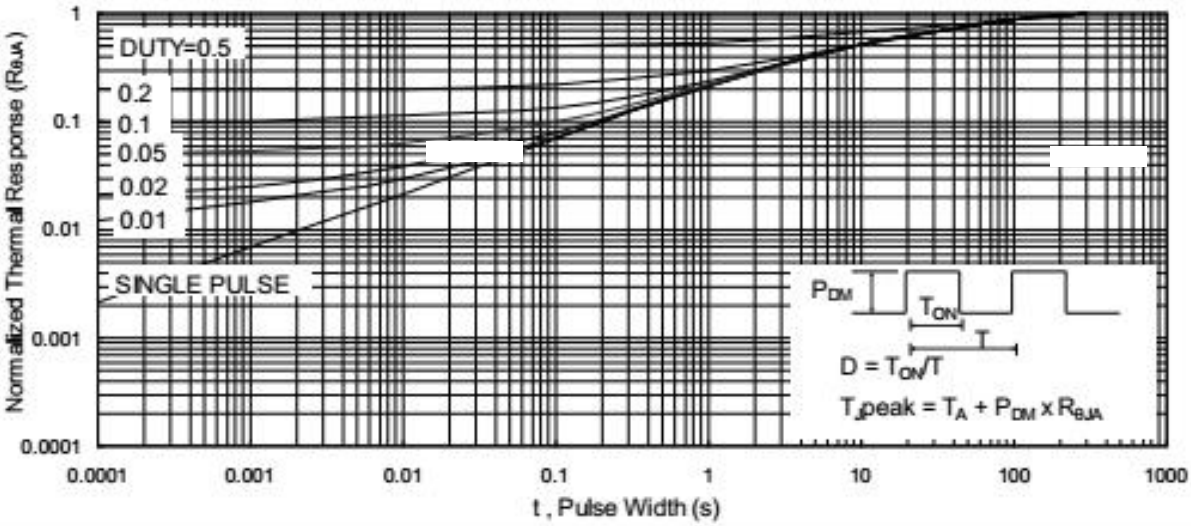


Fig.9 Normalized Maximum Transient Thermal Impedance

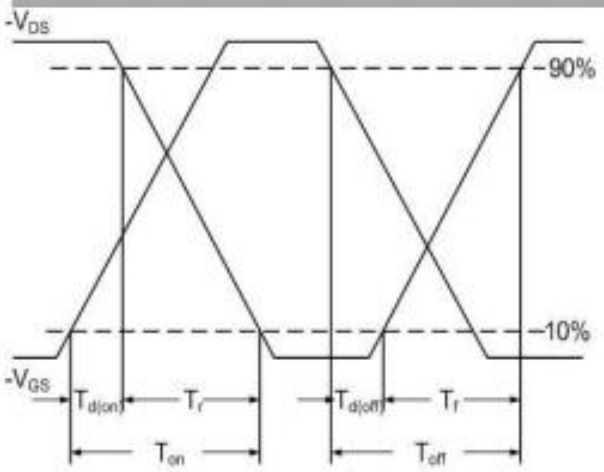


Fig.10 Switching Time Waveform

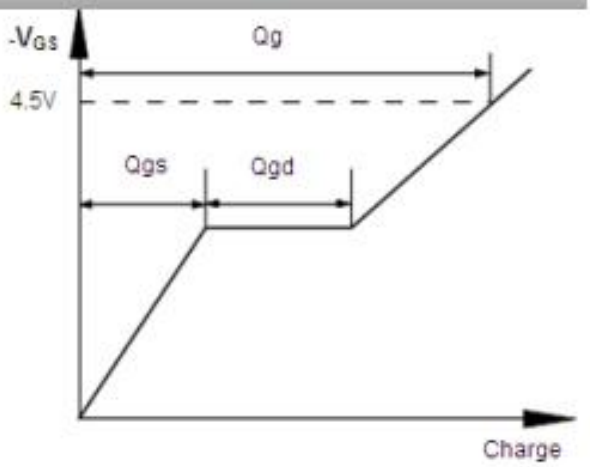


Fig.11 Gate Charge Waveform