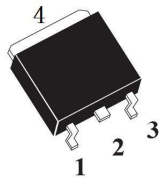
Si6180

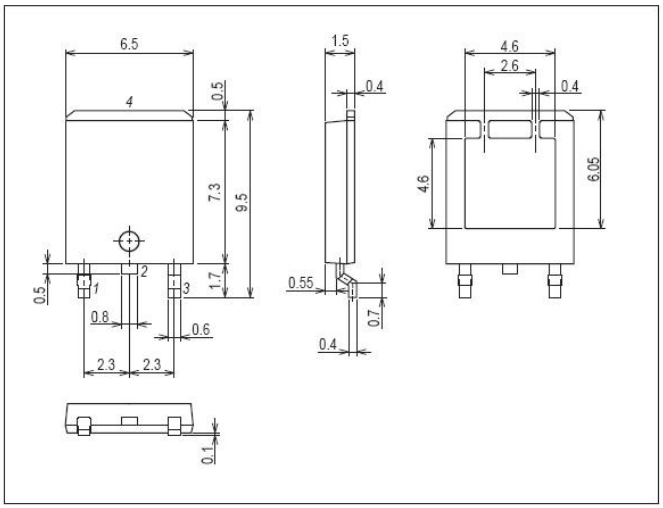
Features

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



Package Dimensions

TO-252



Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		-60	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		-12	A
Drain Current (Pulse)	I_{DP}	PW≤10uS, duty cycle≤1%	-25	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (1000mm^2×0.8mm) 1unit	30	W
Total Dissipation	P_T	Mounted on a ceramic board (1000mm^2×0.8mm)	30	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	-60	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=-60V, V_{GS}=0V	-	-	-1	uA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250uA	-1	-	-2.5	V
Static Drain-to-Source On-State Resistance	$R_{DS(ON)}$	I_D=-5A, V_{GS}=-10V	-	68	80	mΩ
	$R_{DS(ON)}$	I_D=-3A, V_{GS}=-4.5V	-	80	110	mΩ
Input Capacitance	C_{iss}	V_{DS}=-30V, V_{GS}=0V, f=1MHz	-	190	-	pF
Output Capacitance	C_{oss}	V_{DS}=-30V, V_{GS}=0V, f=1MHz	-	100	-	pF
Reverse Transfer Capacitance	C_{rss}	V_{DS}=-30V, V_{GS}=0V, f=1MHz	-	12	-	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_{DS}=-30V, I_D=-1.5A, R_{GEN}=1Ω, V_{GS}=10V	-	12	-	nS
Rise Time	t_r		-	16	-	nS
Turn-off Delay Time	$t_{d(off)}$		-	40	-	nS
Fall Time	t_f		-	11	-	nS
Total Gate Charge	Q_g	V_{DS}=-30V, V_{GS}=4.5V, I_D=3A	-	22	-	nC
Gate-to-Source Charge	Q_{gs}		-	25	-	nC
Gate-to-Drain “Miller” Charge	Q_{gd}		-	20	-	nC
Diode Forward Voltage	V_{SD}	I_S=-3A, V_{GS}=0V	-	-0.75	-	V

Typical Characteristics at T_a=25°C

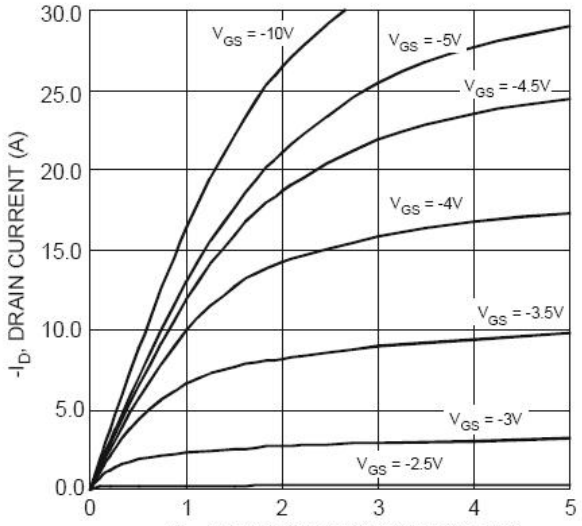


Figure 1 Typical Output Characteristics

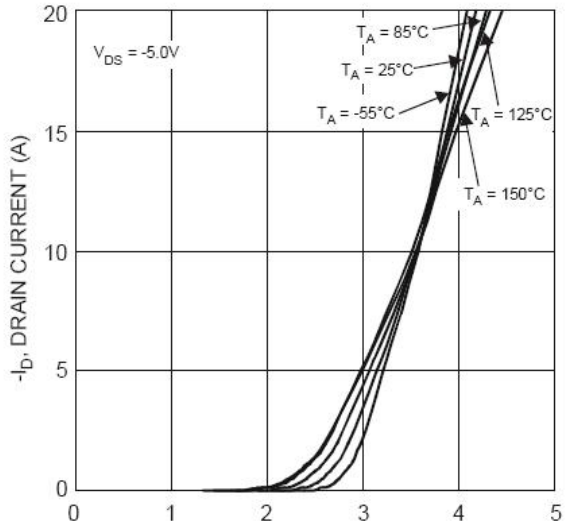


Figure 2 Typical Transfer Characteristics

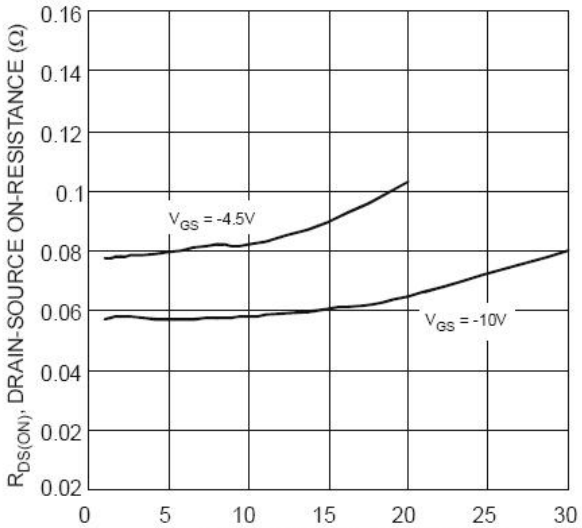


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

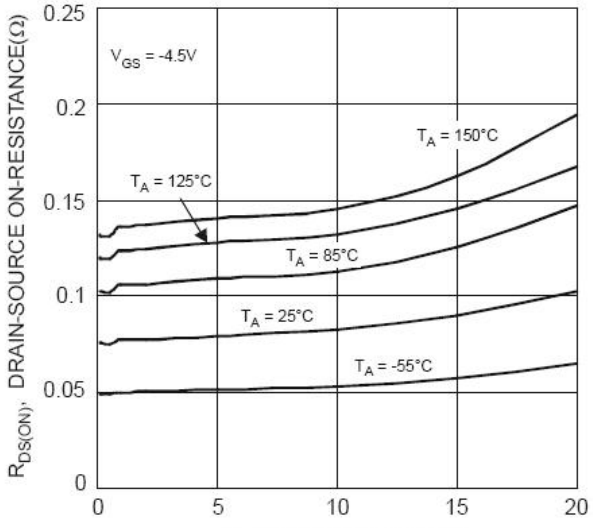


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

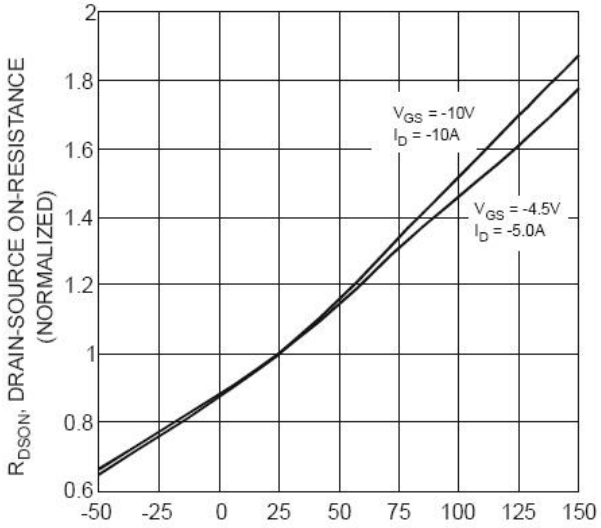


Figure 5 On-Resistance Variation with Temperature

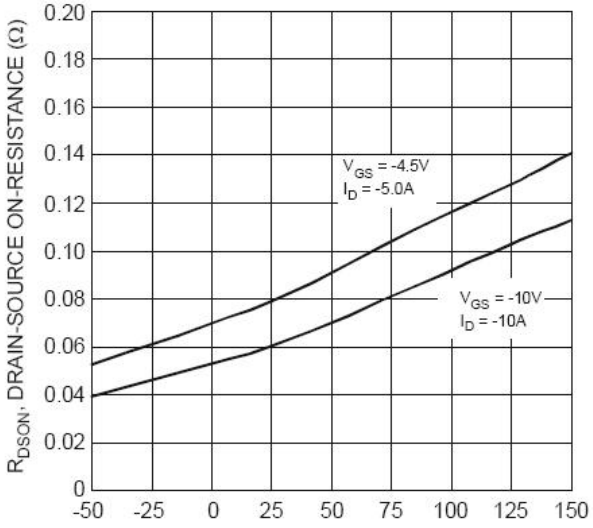


Figure 6 On-Resistance Variation with Temperature

Typical Characteristics at T_a=25°C (Continued)

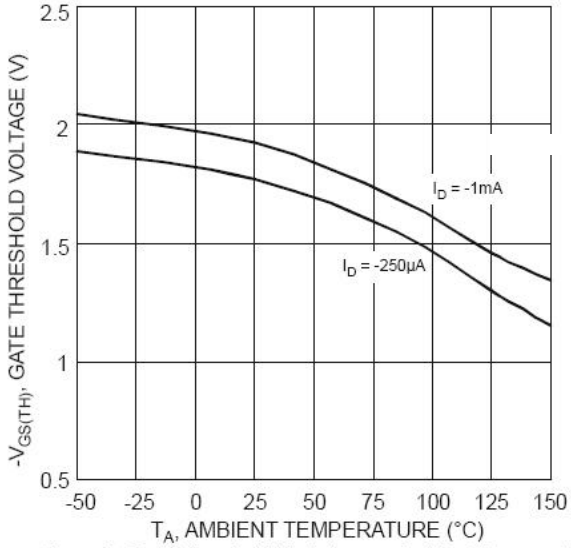


Figure 7 Gate Threshold Variation vs. Ambient Temperature

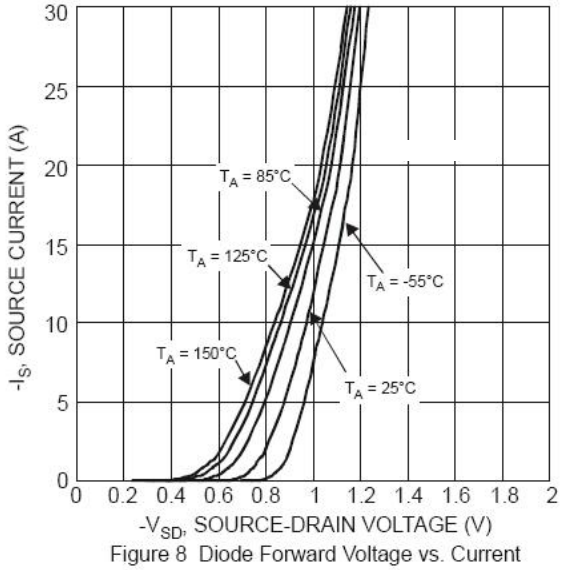


Figure 8 Diode Forward Voltage vs. Current

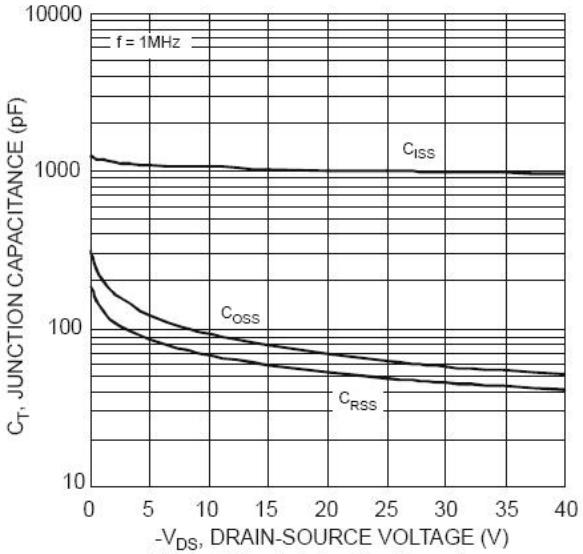


Figure 9 Typical Junction Capacitance

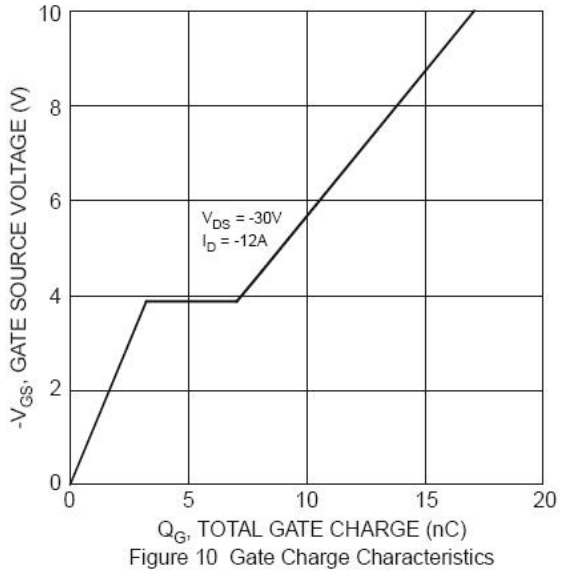


Figure 10 Gate Charge Characteristics