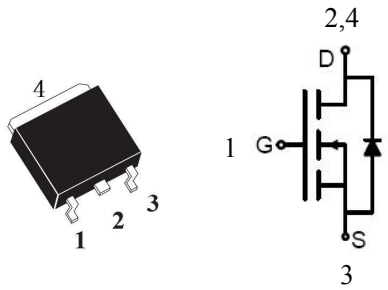
Si6010

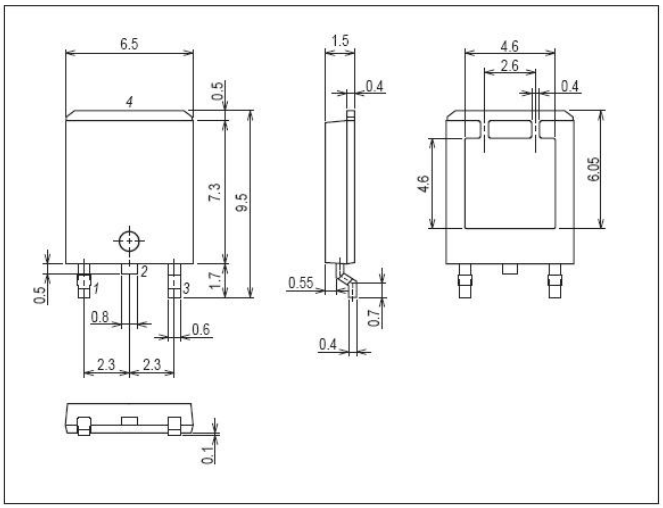
Features

- 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		10	A
Drain Current (Pulse)	I_{DP}	PW≤10uS, duty cycle≤1%	30	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (1000mm^2×0.8mm) 1unit	90	W
Total Dissipation	P_T	Mounted on a ceramic board (1000mm^2×0.8mm)	90	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}=±8V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250uA	0.8	1.1	1.4	V
Static Drain-to-Source On-State Resistance	$R_{DS(ON)}$	I_D=3A, V_{GS}=10V	-	78	105	mΩ
	$R_{DS(ON)}$	I_D=3A, V_{GS}=4.5V	-	95	125	mΩ
Input Capacitance	C_{iss}	V_{DS}=30V, V_{GS}=0V, f=1MHz	-	247	-	pF
Output Capacitance	C_{oss}	V_{DS}=30V, V_{GS}=0V, f=1MHz	-	34	-	pF
Reverse Transfer Capacitance	C_{rss}	V_{DS}=30V, V_{GS}=0V, f=1MHz	-	19.5	-	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	-	6	-	nS
Rise Time	t_r		-	15	-	nS
Turn-off Delay Time	$t_{d(off)}$		-	15	-	nS
Fall Time	t_f		-	10	-	nS
Total Gate Charge	Q_g	V_{DS}=30V, V_{GS}=4.5V, I_D=3A	-	6	-	nC
Gate-to-Source Charge	Q_{gs}		-	1	-	nC
Gate-to-Drain “Miller” Charge	Q_{gd}		-	1.3	-	nC
Diode Forward Voltage	V_{SD}	I_S=3A, V_{GS}=0V	-	-	1.2	V

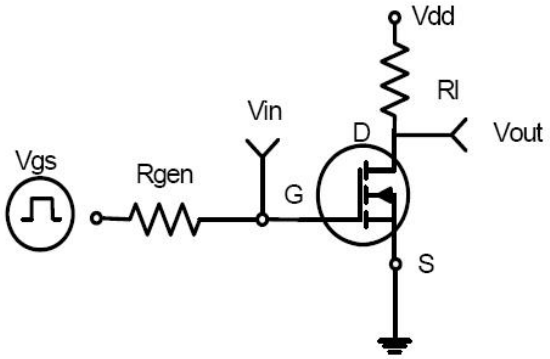


Figure 1:Switching Test Circuit

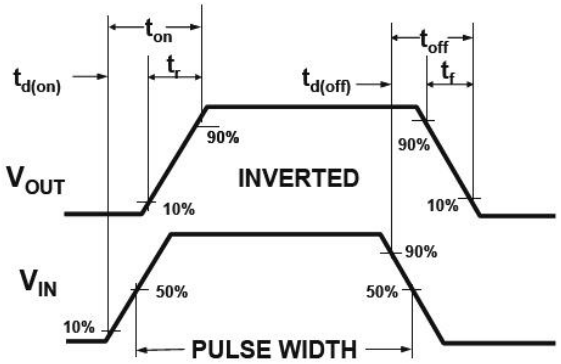


Figure 2:Switching Waveforms

Typical Characteristics at T_a=25^{0}C

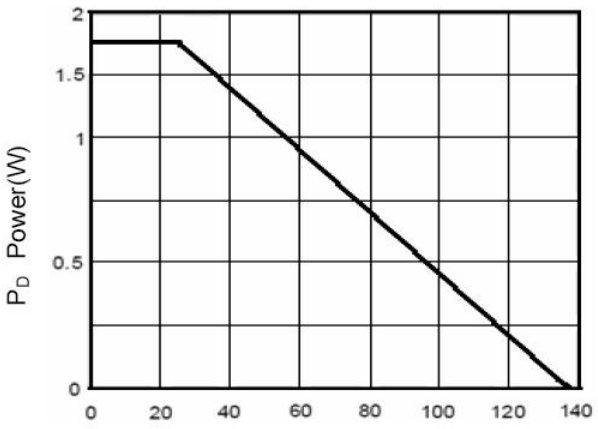


Figure 3 Power Dissipation

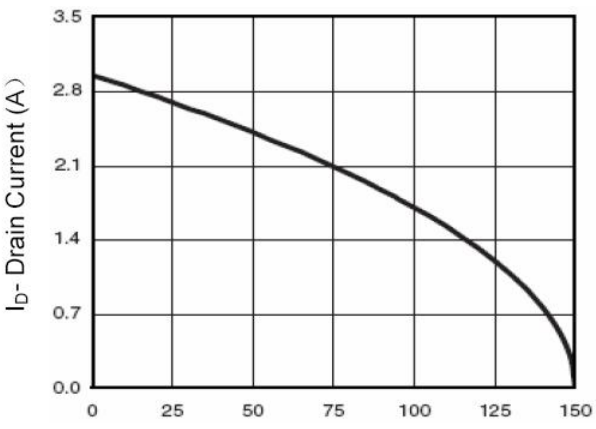


Figure 4 Drain Current

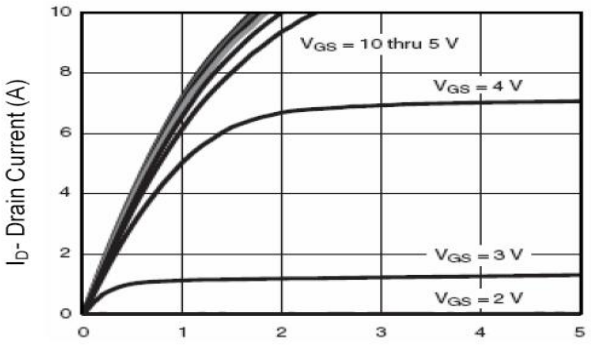


Figure 5 Output Characteristics

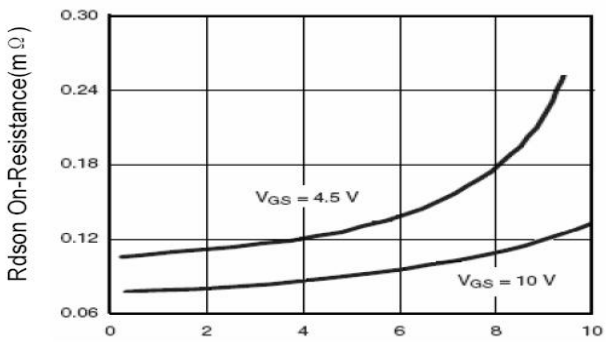


Figure 6 Drain-Source On-Resistance

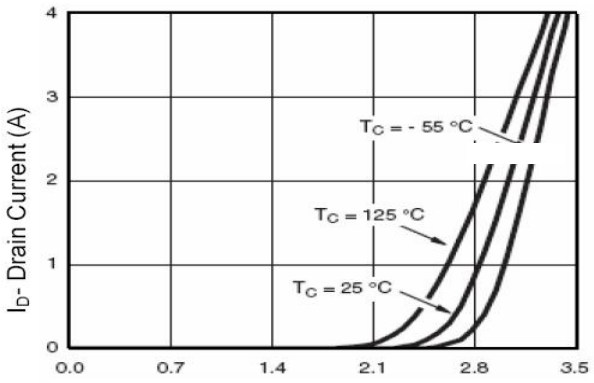


Figure 7 Transfer Characteristics

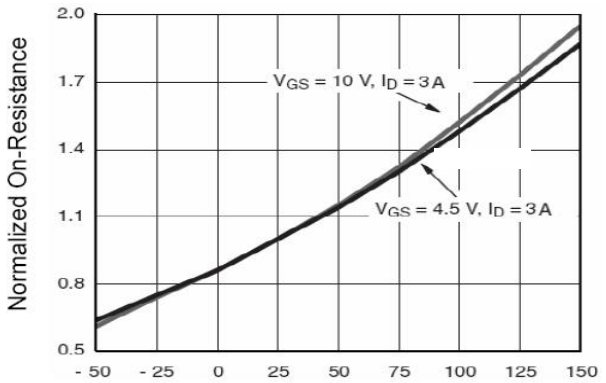


Figure 8 Drain-Source On-Resistance

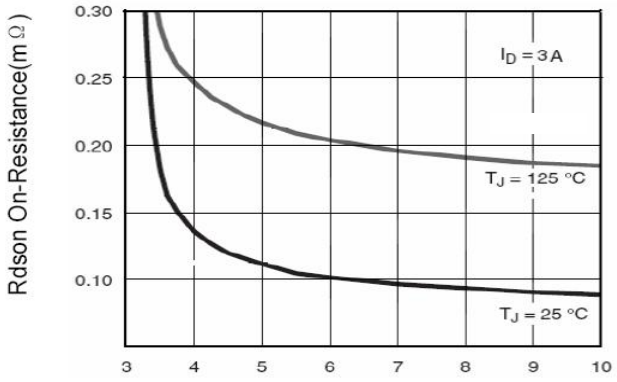


Figure 9 Rdson vs Vgs

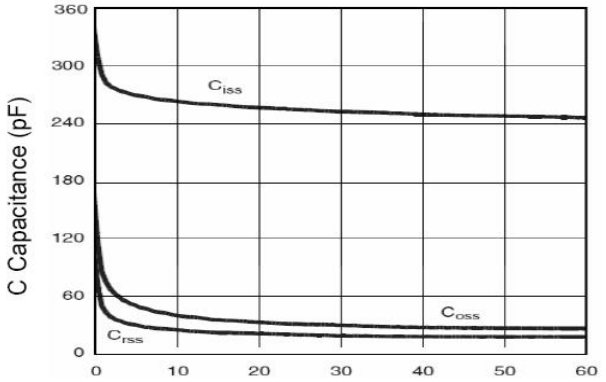


Figure 10 Capacitance vs Vds

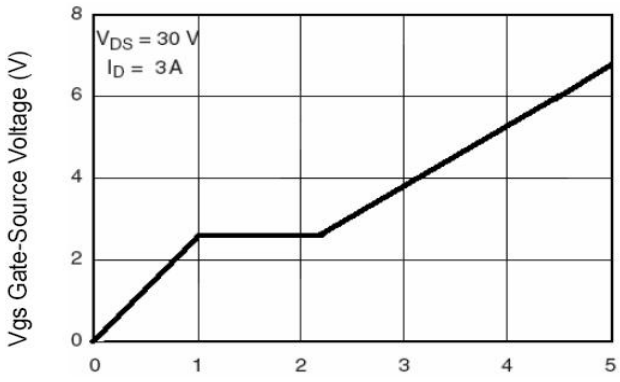


Figure 11 Gate Charge

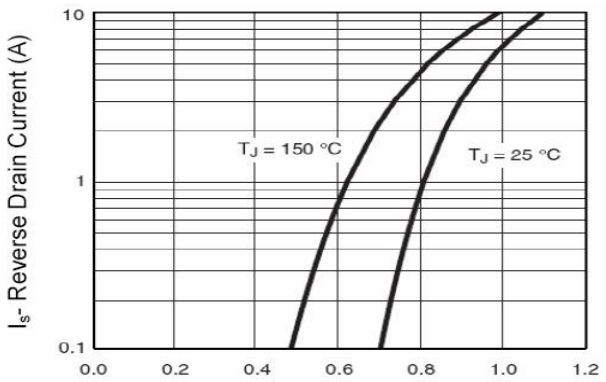


Figure 12 Source- Drain Diode Forward