



# 2SJ538 — P-Channel Silicon MOSFET

## Load Switching Applications

### Features

- Low ON-resistance.
- 4V drive.

### Specifications

**Absolute Maximum Ratings** at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		-30	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		-15	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	-45	A
Allowable Power Dissipation	PD		1.0	W
		$T_c=25^\circ\text{C}$	30	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1\text{mA}$ , $V_{GS}=0\text{V}$	-30			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30\text{V}$ , $V_{GS}=0\text{V}$			-100	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10\text{V}$ , $I_D=-1\text{mA}$	-1.0		-2.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10\text{V}$ , $I_D=-8\text{A}$	10	15		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-8\text{A}$ , $V_{GS}=-10\text{V}$		24	30	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=-4\text{A}$ , $V_{GS}=-4\text{V}$		40	52	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-10\text{V}$ , $f=1\text{MHz}$		2000		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-10\text{V}$ , $f=1\text{MHz}$		1000		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-10\text{V}$ , $f=1\text{MHz}$		470		pF

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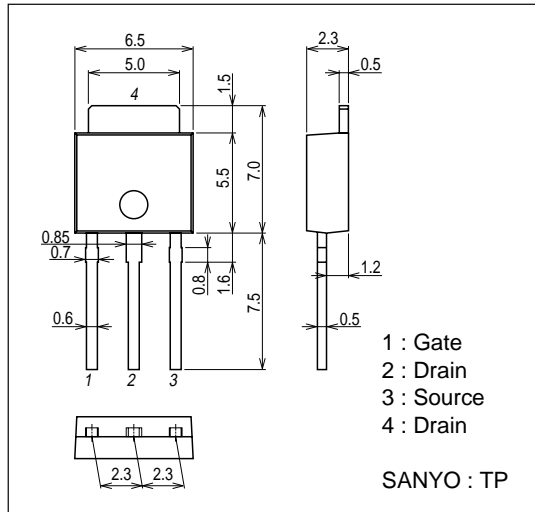
# 2SJ538

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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		20		ns
Rise Time	$t_r$	See specified Test Circuit.		70		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		210		ns
Fall Time	$t_f$	See specified Test Circuit.		140		ns
Total Gate Charge	Qg	$V_{DS}=-10V, V_{GS}=-10V, I_D=-8A$		58		nC
Gate-to-Source Charge	Qgs	$V_{DS}=-10V, V_{GS}=-10V, I_D=-8A$		7		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=-10V, V_{GS}=-10V, I_D=-8A$		17		nC
Diode Forward Voltage	VSD	$I_S=-8A, V_{GS}=0V$		-1.0	-1.5	V

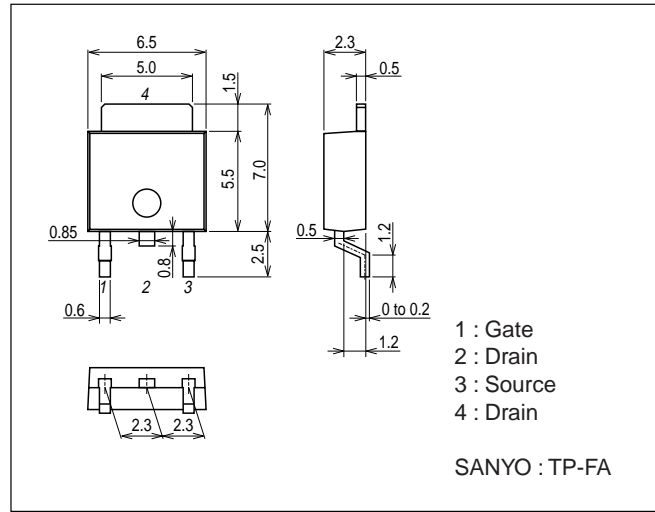
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unit : mm (typ)  
7518-004

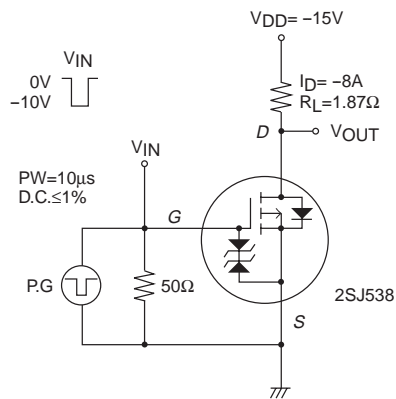


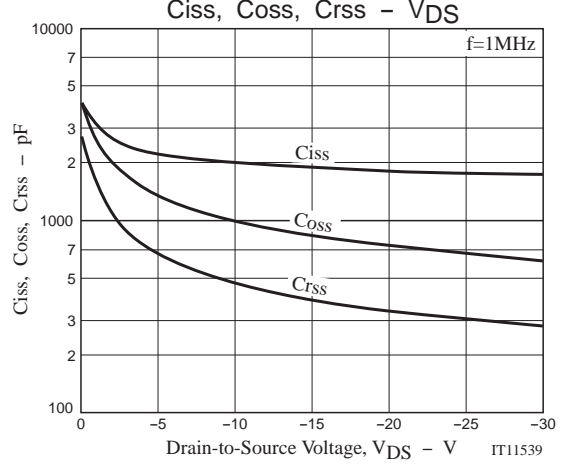
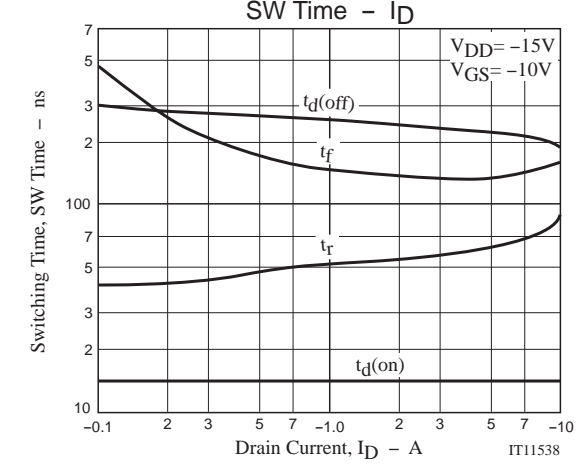
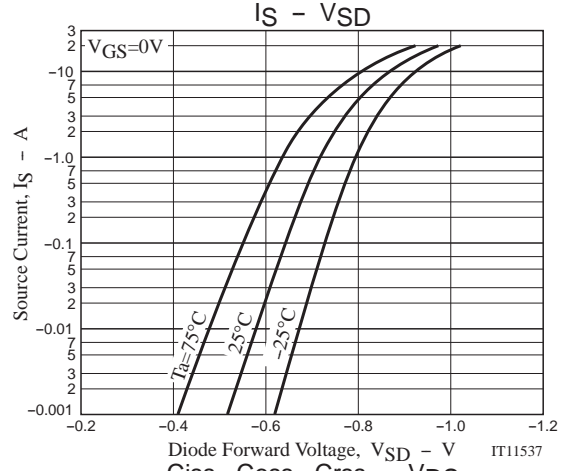
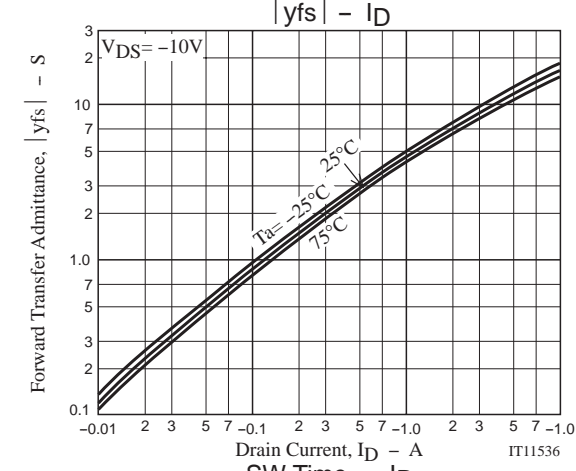
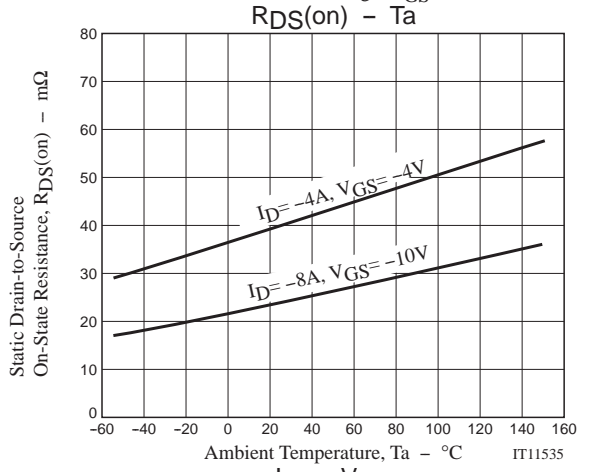
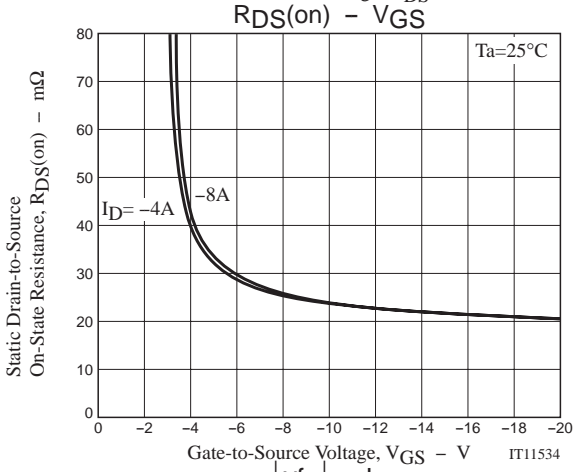
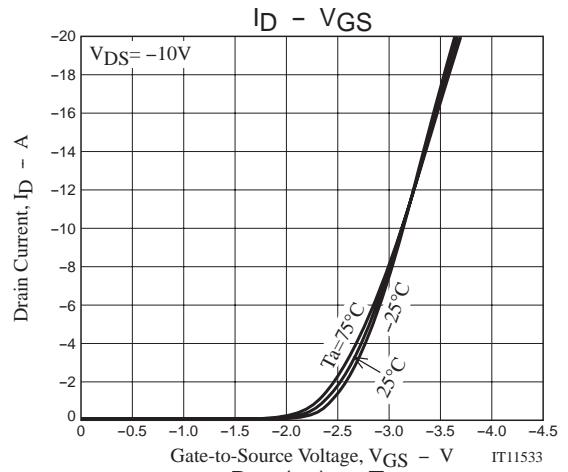
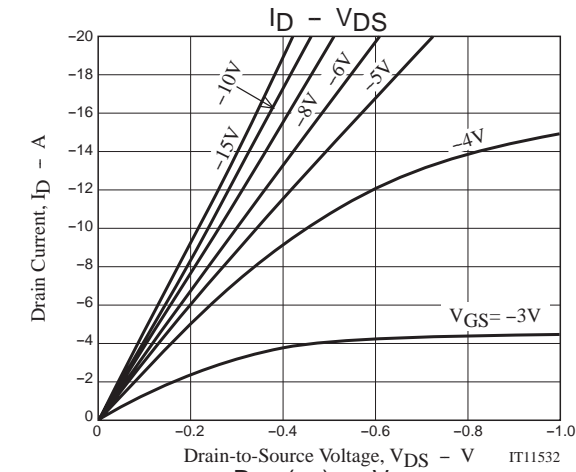
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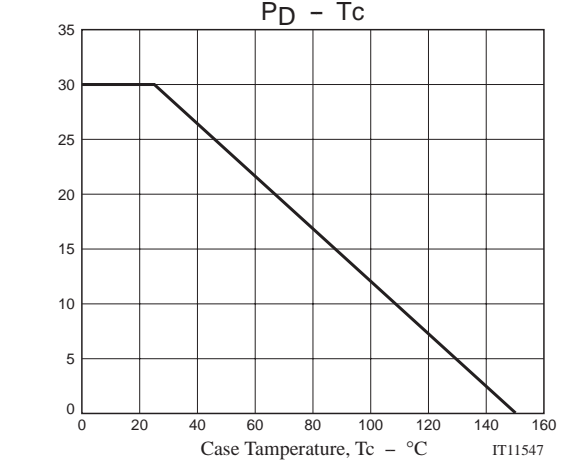
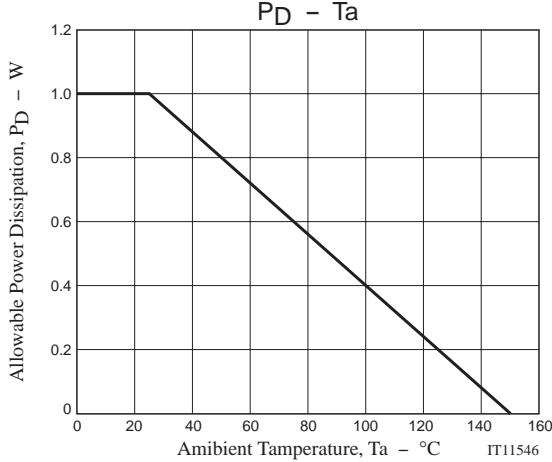
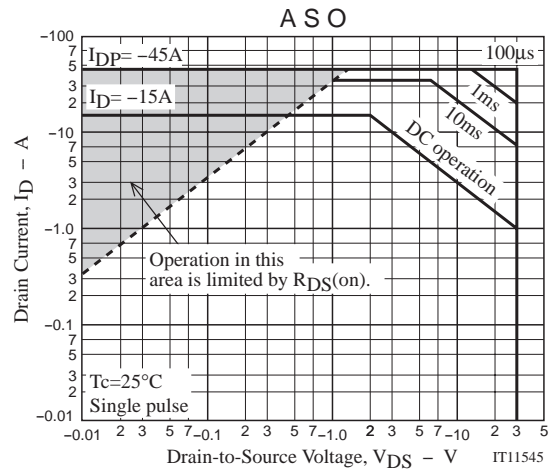
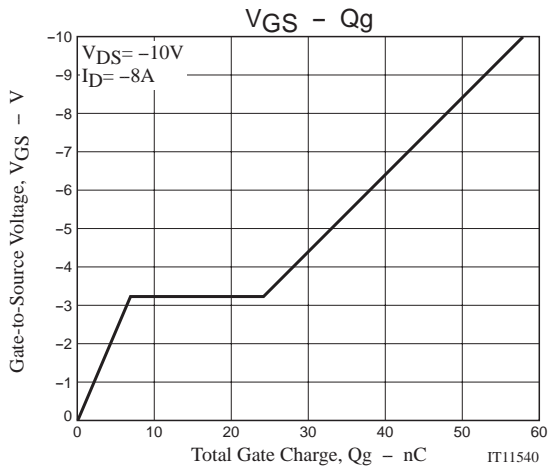
unit : mm (typ)  
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## Switching Time Test Circuit







Note on usage : Since the 2SJ538 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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