

# 2SK1957

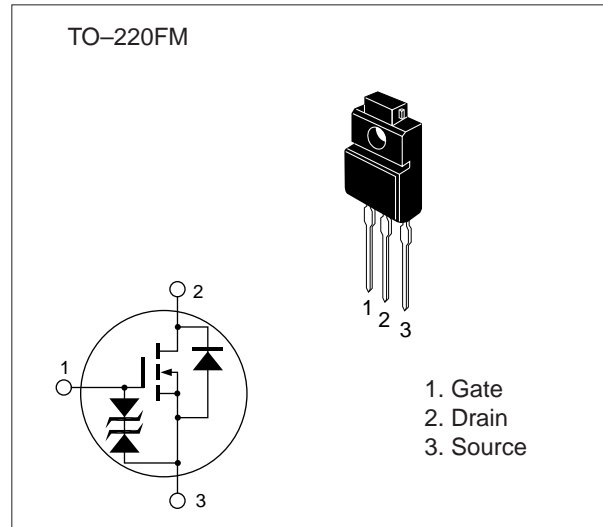
## Silicon N Channel MOS FET

### Application

High speed power switching

### Features

- Low on-resistance
- High speed switching
- Low drive current
- No Secondary Breakdown
- Suitable for Switching regulator, DC – DC converter, Motor Control



**Table 1 Absolute Maximum Ratings** ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	200	V
Gate to source voltage	$V_{GSS}$	$\pm 20$	V
Drain current	$I_D$	7	A
Drain peak current	$I_{D(\text{pulse})}^*$	28	A
Body-drain diode reverse drain current	$I_{DR}$	7	A
Channel dissipation	$P_{ch}^{**}$	30	W
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

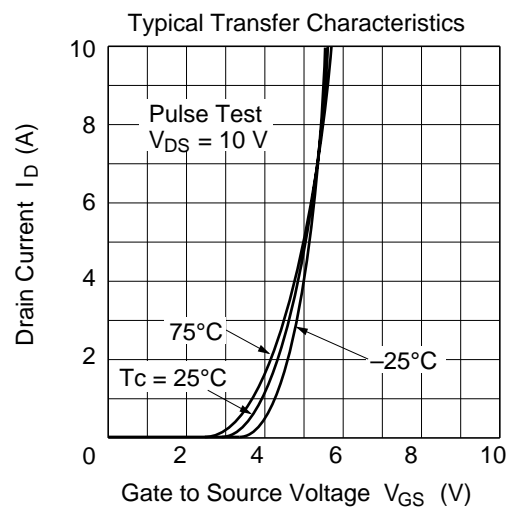
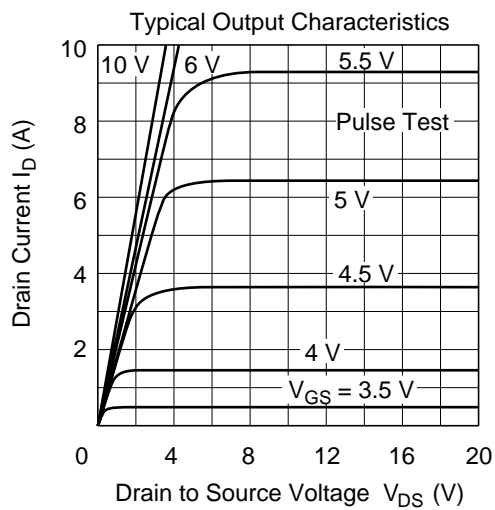
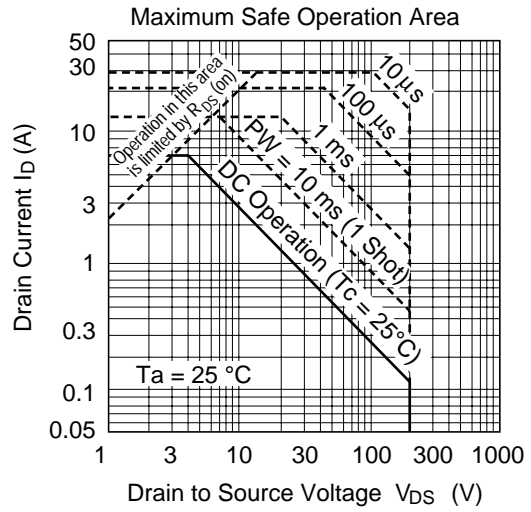
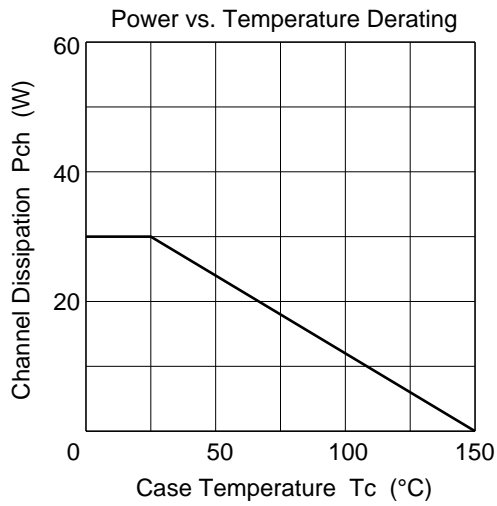
\*  $PW \leq 10 \mu\text{s}$ , duty cycle  $\leq 1\%$

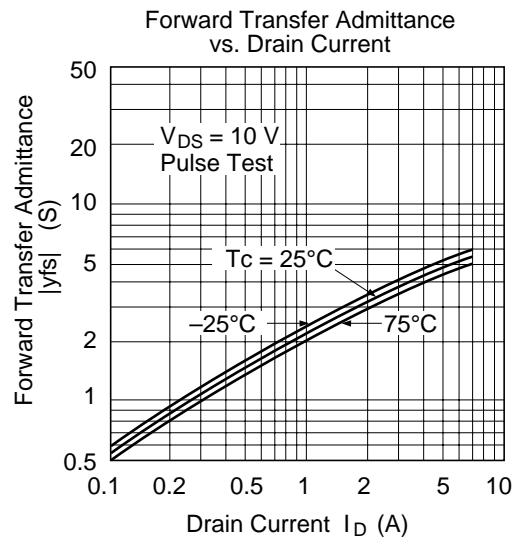
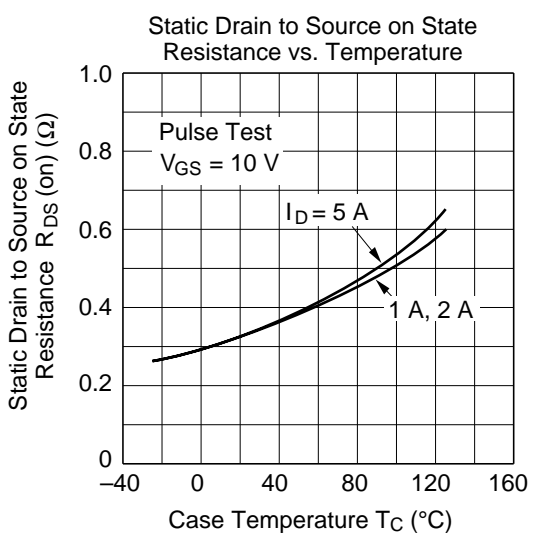
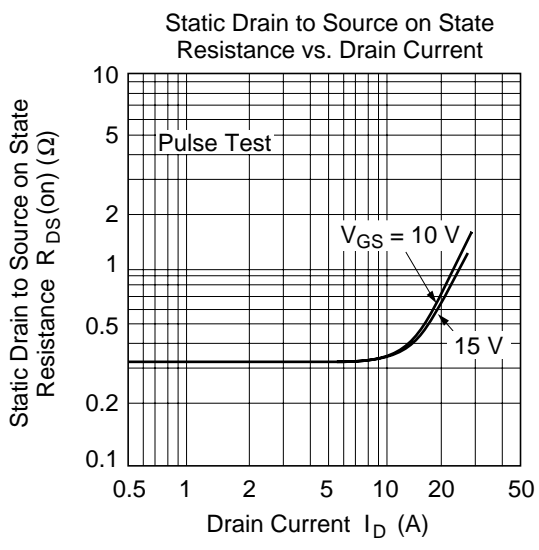
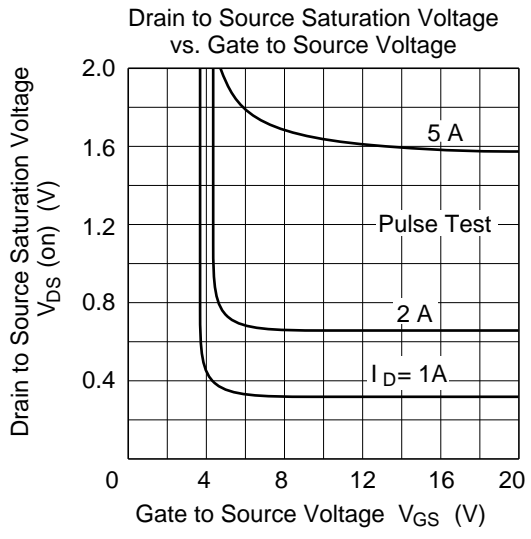
\*\* Value at  $T_c = 25^\circ\text{C}$

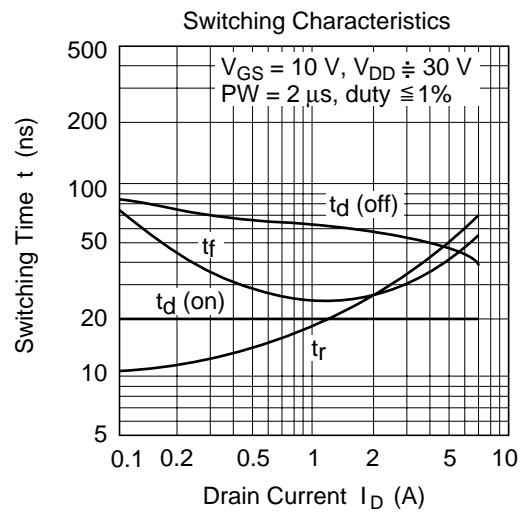
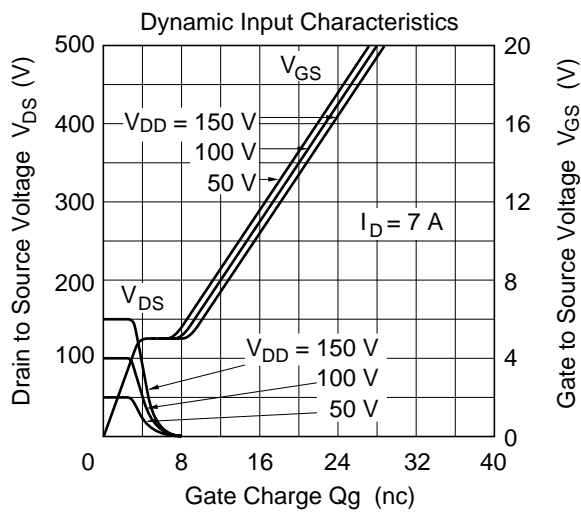
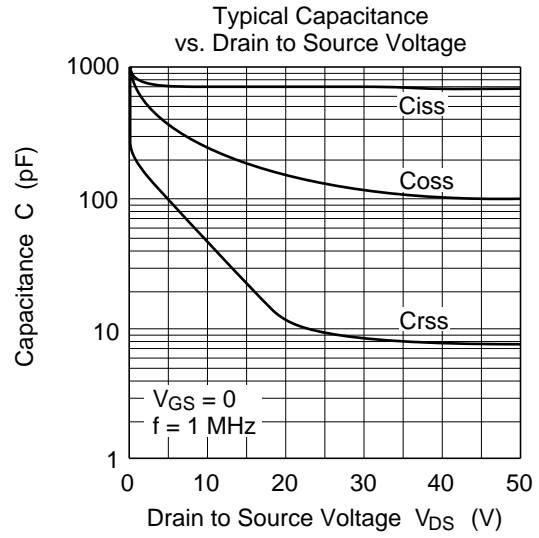
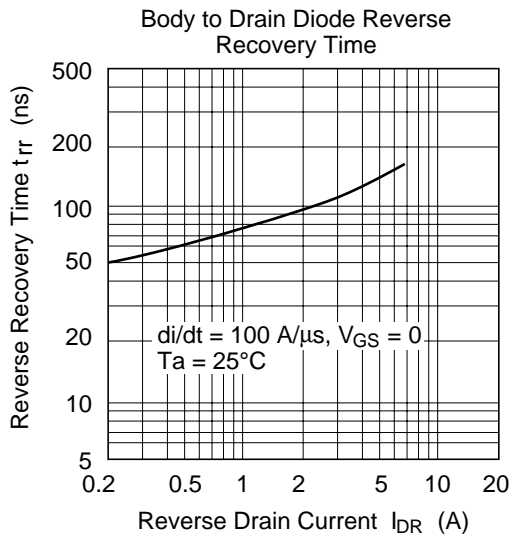
**Table 2 Electrical Characteristics** ( $T_a = 25^\circ\text{C}$ )

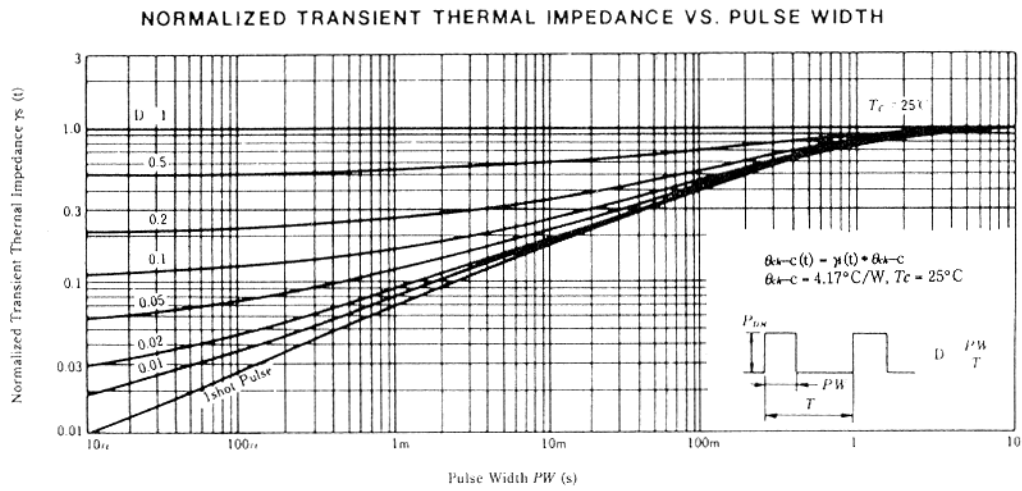
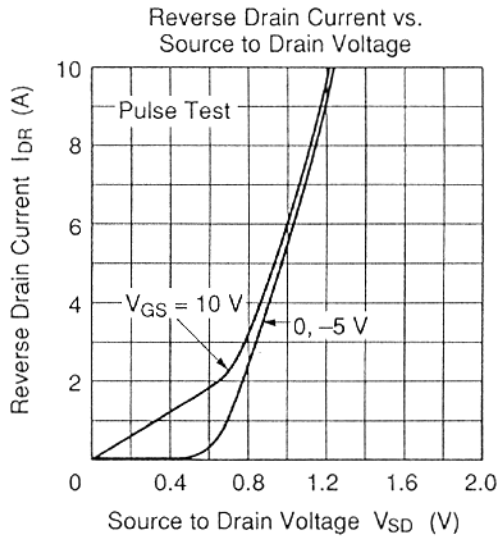
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	200	—	—	V	$I_D = 10\text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 20$	—	—	V	$I_G = \pm 100\ \mu\text{A}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 16\text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	250	$\mu\text{A}$	$V_{DS} = 160\text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	4.0	V	$I_D = 1\text{ mA}$ , $V_{DS} = 10\text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.33	0.45	$\Omega$	$I_D = 4\text{ A}$ $V_{GS} = 10\text{ V}^*$
Forward transfer admittance	$ y_{fs} $	3.0	4.5	—	S	$I_D = 4\text{ A}$ $V_{DS} = 10\text{ V}^*$
Input capacitance	$C_{iss}$	—	700	—	pF	$V_{DS} = 10\text{ V}$
Output capacitance	$C_{oss}$	—	260	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	45	—	pF	$f = 1\text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	20	—	ns	$I_D = 4\text{ A}$
Rise time	$t_r$	—	45	—	ns	$V_{GS} = 10\text{ V}$
Turn-off delay time	$t_{d(off)}$	—	50	—	ns	$R_L = 7.5\ \Omega$
Fall time	$t_f$	—	35	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	1.1	—	V	$I_F = 7\text{ A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	150	—	ns	$I_F = 7\text{ A}$ , $V_{GS} = 0$ , $diF / dt = 100\text{ A} / \mu\text{s}$

\* Pulse Test

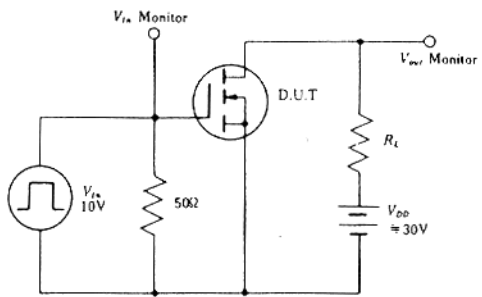








SWITCHING TIME TEST CIRCUIT



WAVEFORMS

