

TOSHIBA**Discrete Semiconductors****2SK2388****Silicon N Channel MOS Type (τ - MOS IV)**

High Speed, High Current Switching Applications.
Chopper Regulator, DC-DC Converter and Motor Drive Applications.

- Low Drain-Source ON Resistance: $R_{DS(ON)} = 1.8\Omega$ (Typ.)
- High Forward Transfer Admittance: $|Y_{fs}| = 3.3S$ (Typ.)
- Low Leakage Current: $I_{BSS} = 100 \mu A$ (Max.) ($V_{DS} = 600V$)
- Enhancement Mode: $V_{th} = 2.0 \sim 4.0V$ ($V_{DS} = 10V, I_D = 1 mA$)

Maximum Ratings ($T_a = 25^\circ C$)

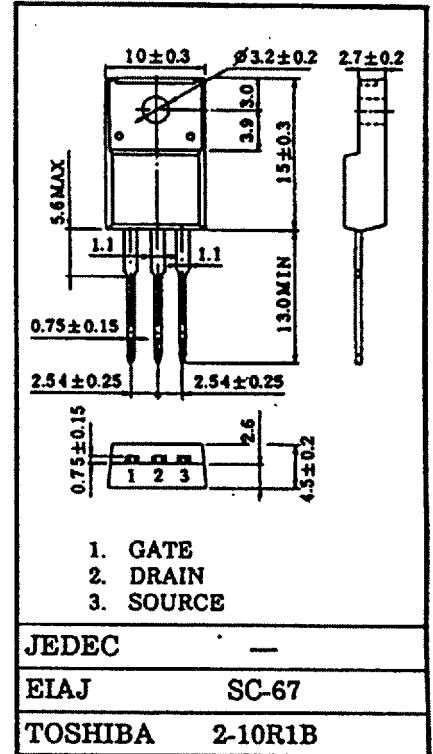
Characteristic		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	600	V
Drain-Gate Voltage ($R_{GS} = 20 k\Omega$)		V_{DGR}	600	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	3.5	A
	Pulse	I_{DP}	14	A
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	40	W
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	-55 ~ 150	$^\circ C$

Thermal Characteristics

Characteristic	Symbol	Max.	Unit
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	3.125	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	$^\circ C/W$

This transistor is an electrostatic sensitive device.
Please Handle With Caution.

Unit in mm



Weight : 1.9g

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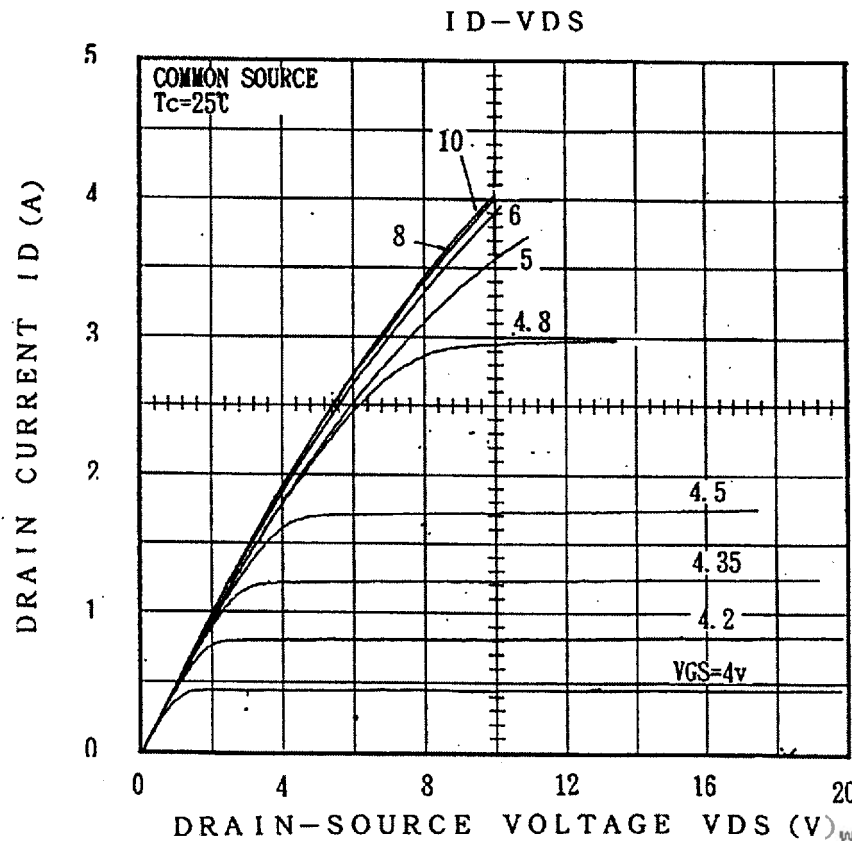
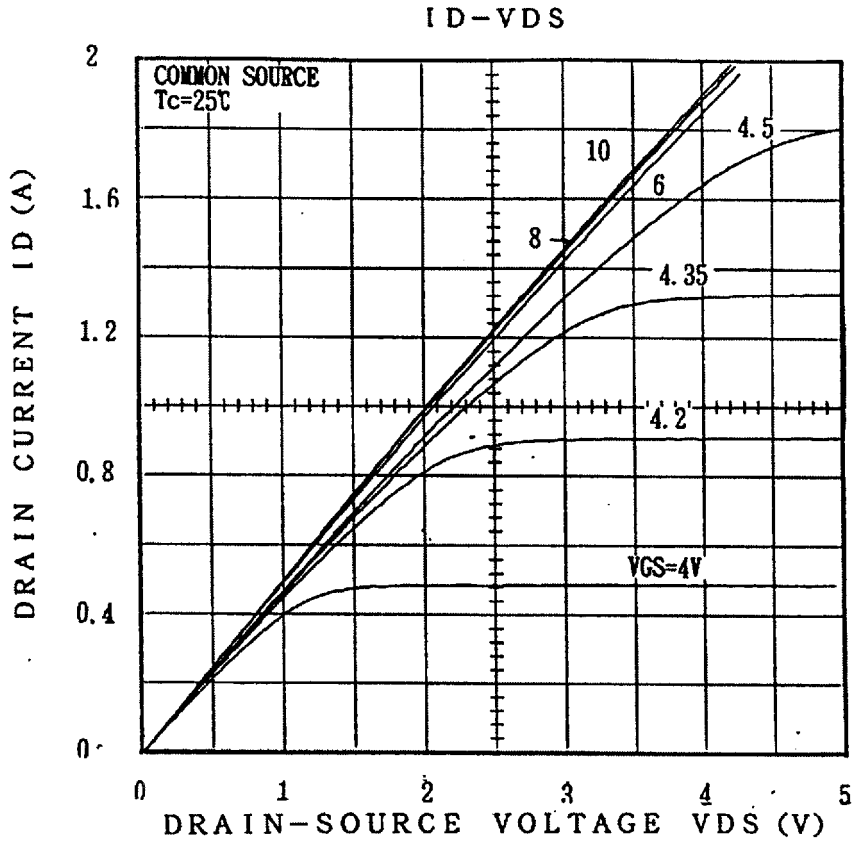
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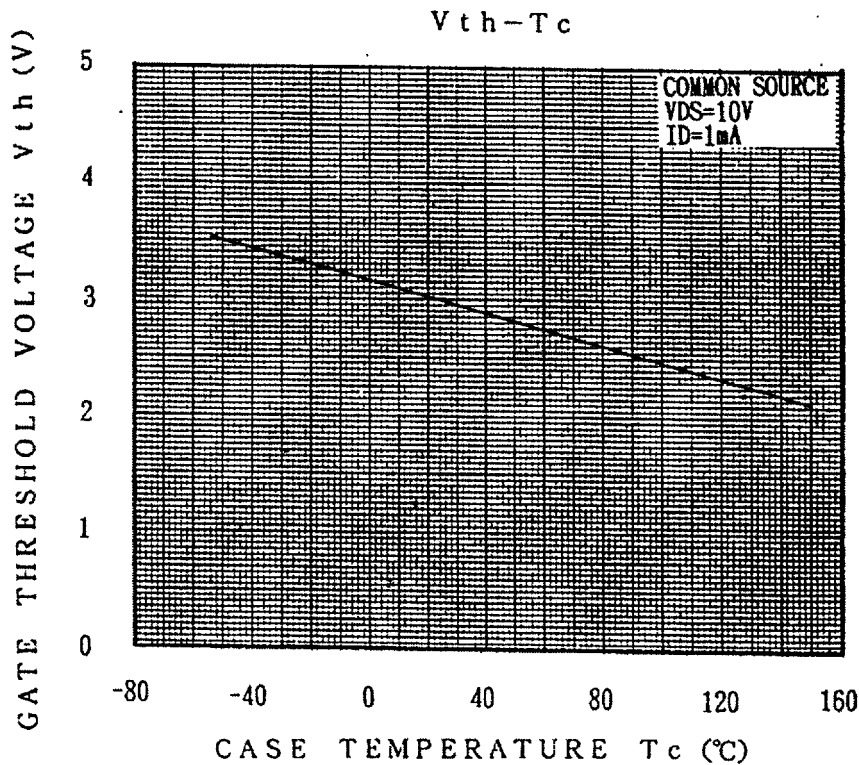
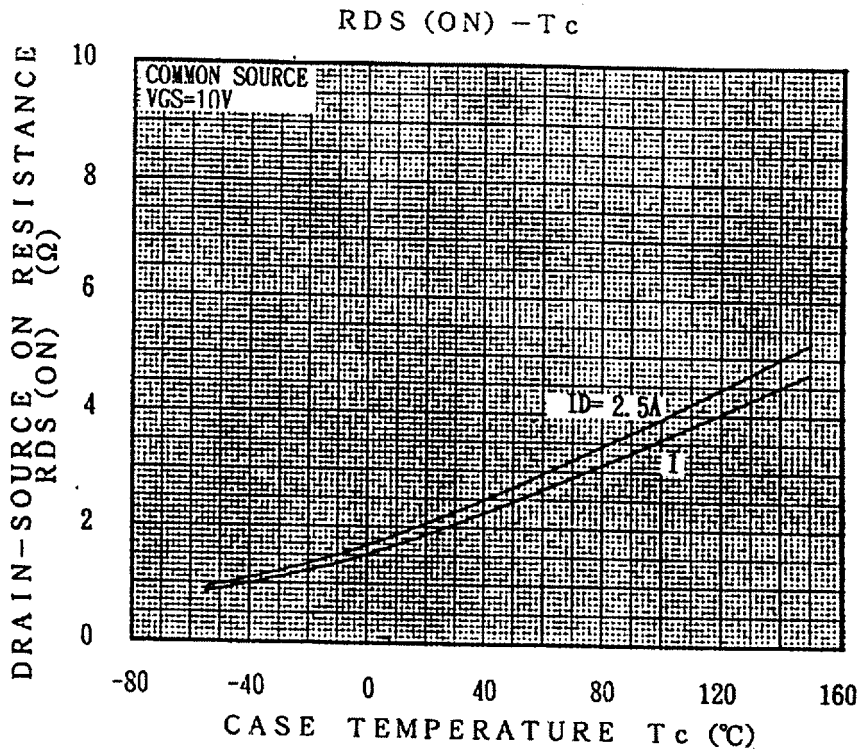
Electrical Characteristics ($T_J = 25^\circ\text{C}$)

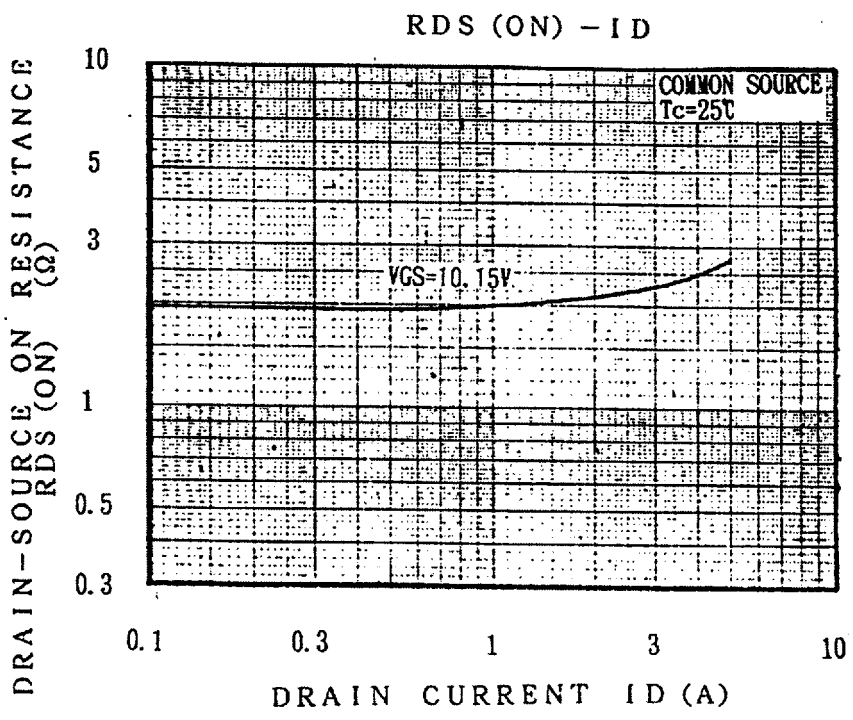
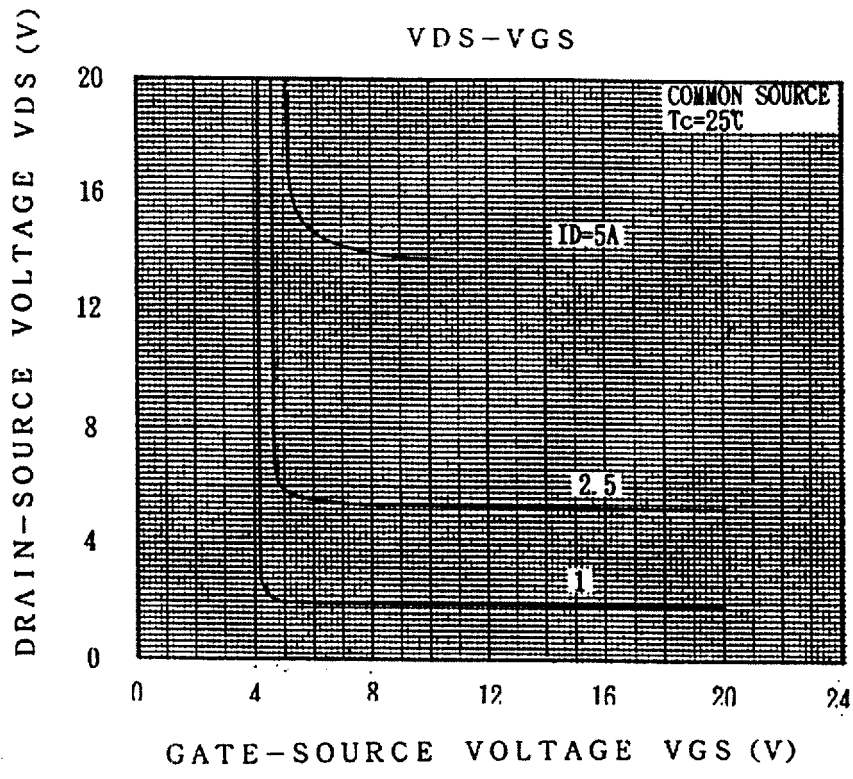
Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 25\text{V}, V_{DS} = 0\text{V}$	-	-	± 10	μA
Gate-Source Breakdown Voltage		$V_{(BR)GSS}$	$I_G = 100 \mu\text{A}, V_{DS} = 0\text{V}$	± 30	-	-	V
Drain Cut-Off Current		I_{DSS}	$V_{DS} = 600\text{V}, V_{GS} = 0\text{V}$	-	-	100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10 \text{mA}, V_{GS} = 0\text{V}$	600	-	-	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10\text{V}, I_D = 1 \text{mA}$	2.0	-	4.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = 10\text{V}, I_D = 1.8\text{A}$	-	1.8	2.2	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10\text{V}, I_D = 1.8\text{A}$	2.0	3.3	-	S
Input Capacitance		C_{iss}	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}$ $f = 1 \text{MHz}$	-	660	-	pF
Reverse Transfer Capacitance		C_{rss}		-	40	-	
Output Capacitance		C_{oss}		-	180	-	
Switching Timing	Rise Time	t_r		-	15	-	
	Turn-on Time	t_{on}		-	25	-	
	Fall Time	t_f		-	25	-	
	Turn-off Time	t_{off}		-	75	-	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g		$V_{DD} = 400\text{V}, V_{GS} = 10\text{V}$ $I_D = 3.5\text{A}$	-	15	-
Gate-Source Charge		Q_{gs}	-		7.5	-	
Gate-Drain ("Miller") Charge		Q_{gd}	-		7.5	-	

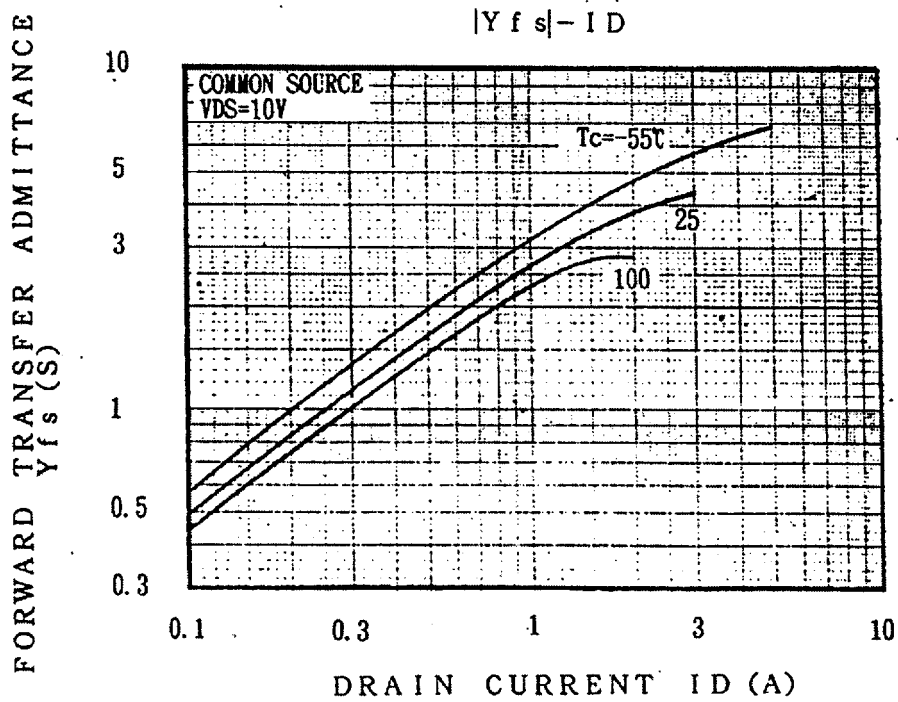
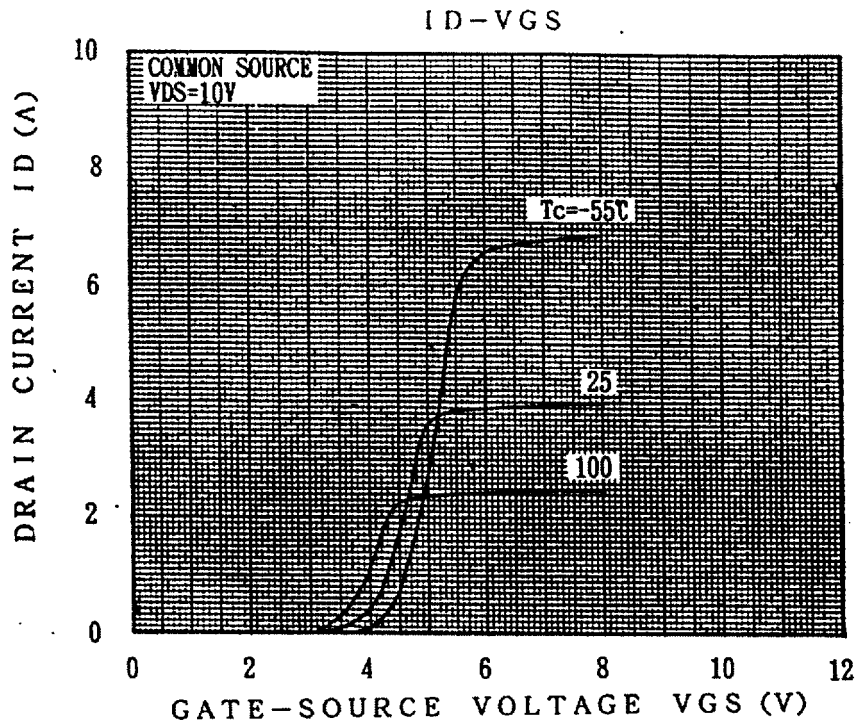
Source-Drain Diode Ratings and Characteristics ($T_J = 25^\circ\text{C}$)

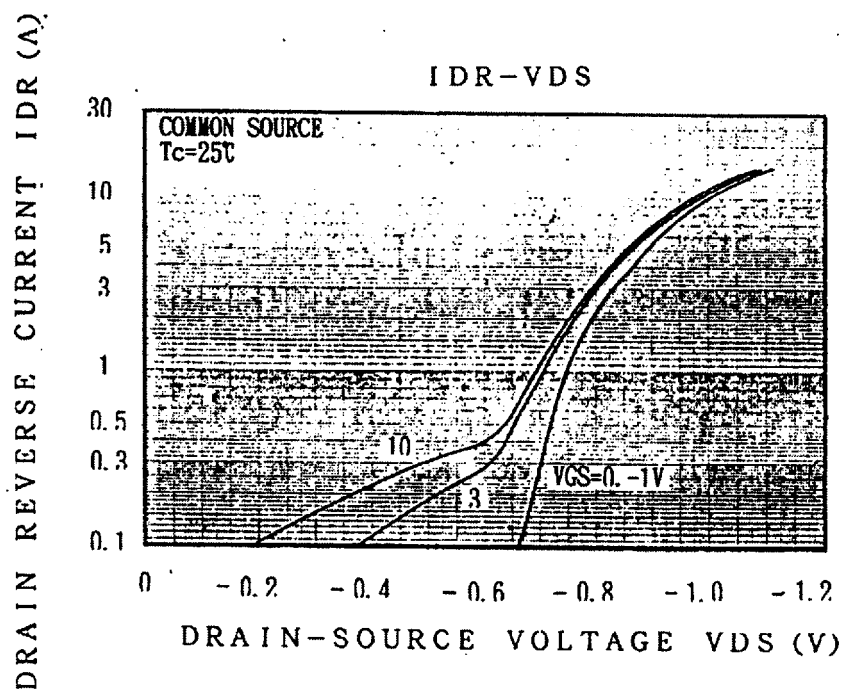
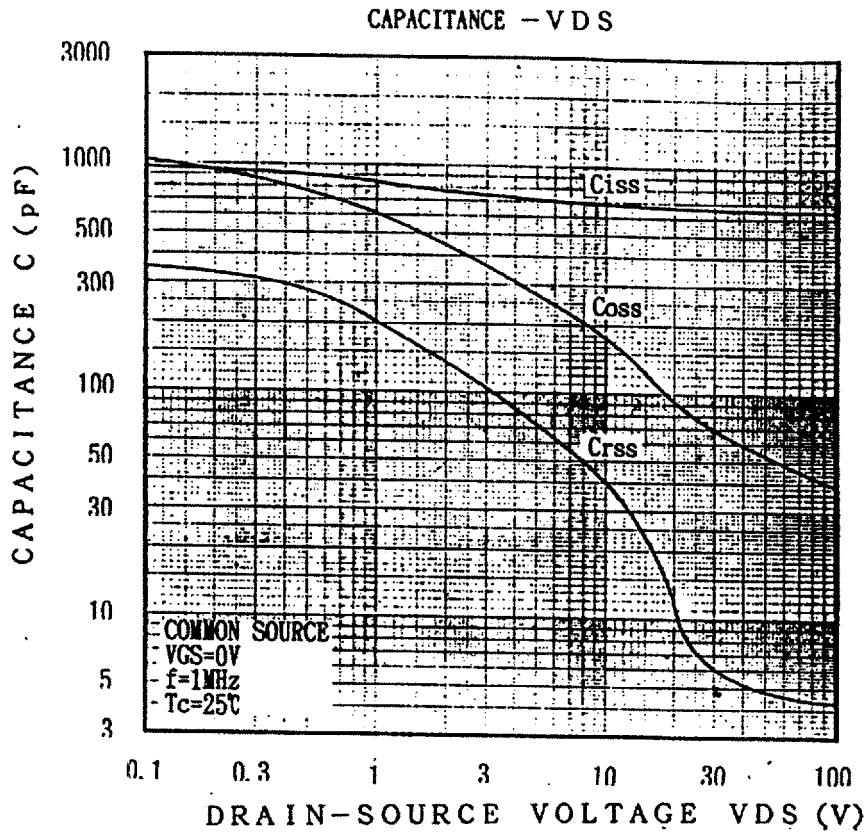
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Continuous Drain Reverse Current	I_{DR}	-	-	-	3.5	A
Pulse Drain Reverse Current	I_{DRP}	-	-	-	14	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 3.5\text{A}, V_{GS} = 0\text{V}$	-	-	-1.7	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 3.5\text{A}, V_{GS} = 0\text{V}$	-	450	-	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = 100\text{A} / \mu\text{s}$	-	2.4	-	μC











DYNAMIC INPUT/OUTPUT CHARACTERISTICS

