

TOSHIBA

Discrete Semiconductors

2SK1358

Field Effect Transistor

Silicon N Channel MOS Type (π -MOS II.5)

High Speed, High Current DC-DC Converter,

Relay Drive and Motor Drive Applications

Features

- Low Drain-Source ON Resistance
 - $R_{DS(ON)} = 1.1\Omega$ (Typ.)
- High Forward Transfer Admittance
 - $|Y_{fs}| = 4.0S$ (Typ.)
- Low Leakage Current
 - $I_{DSS} = 300\mu A$ (Max.) @ $V_{DS} = 720V$
- Enhancement-Mode
 - $V_{th} = 1.5 \sim 3.5V$ @ $V_{DS} = 10V, I_D = 1mA$

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	900	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	900	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	DC	I_D	9
	Pulse	I_{DP}	27
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	150	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 ~ 150	$^\circ C$

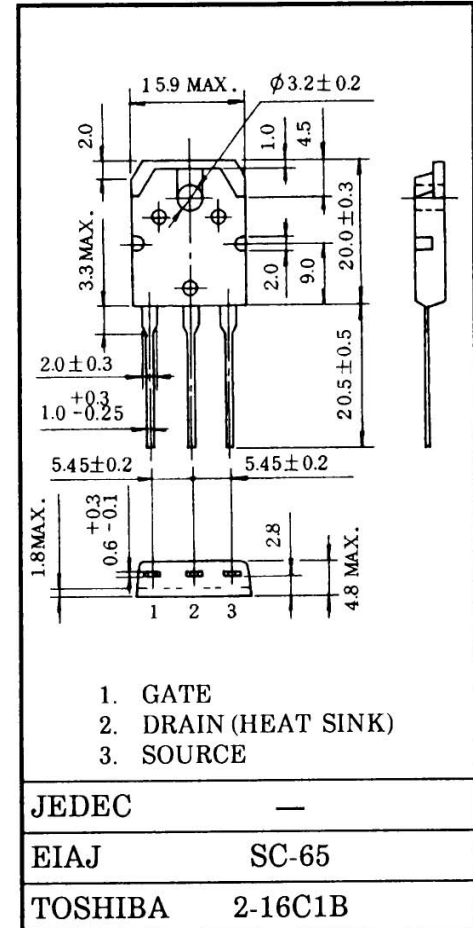
Thermal Characteristics

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	0.833	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	50	$^\circ C/W$

This transistor is an electrostatic sensitive device. Please handle with care.

Industrial Applications

Unit in mm



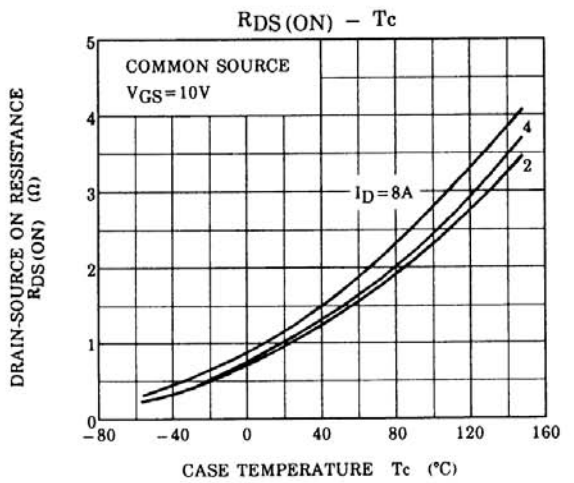
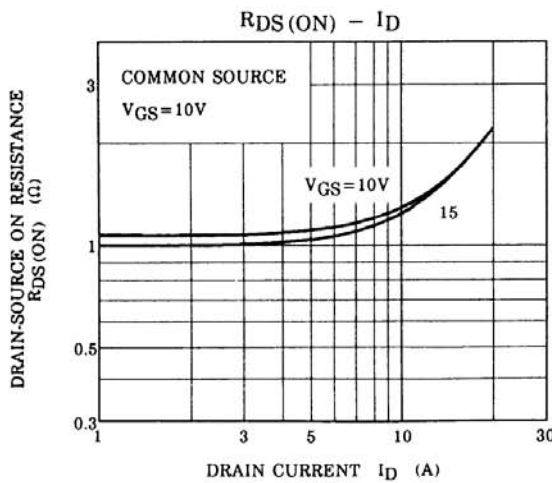
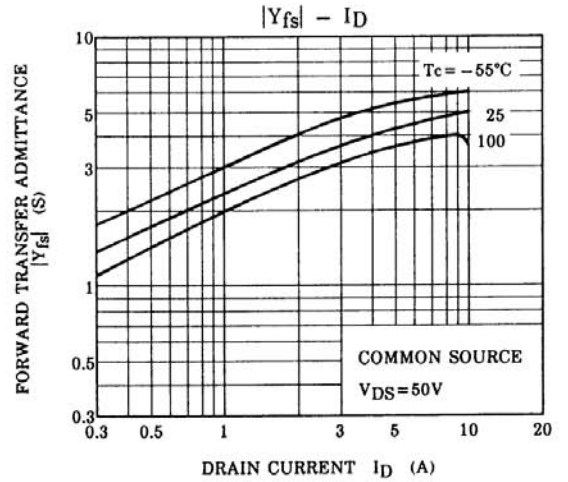
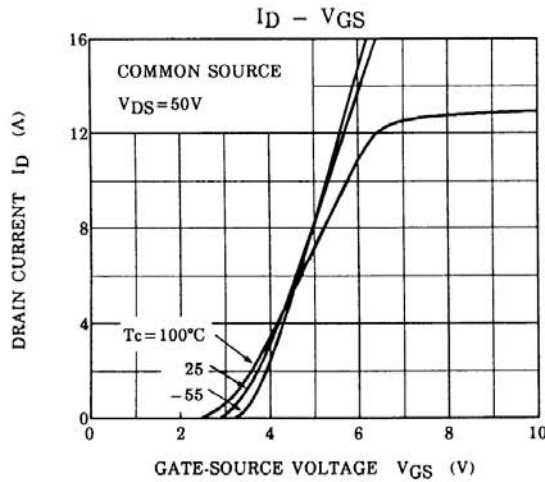
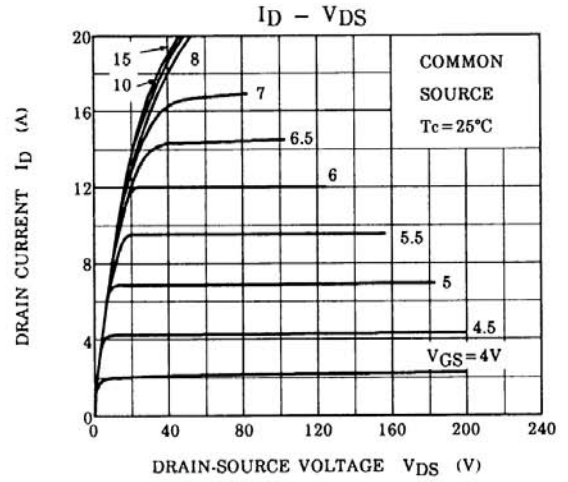
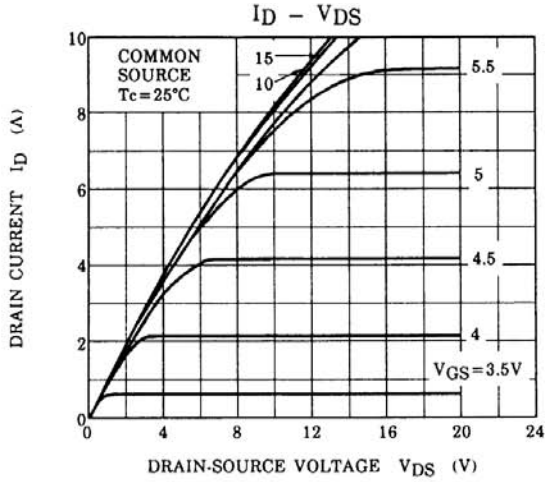
Weight : 4.6g

2SK1358**Electrical Characteristics (Ta = 25°C)**

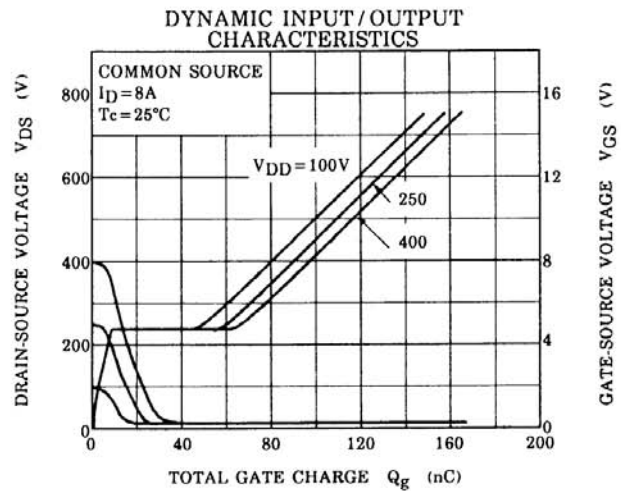
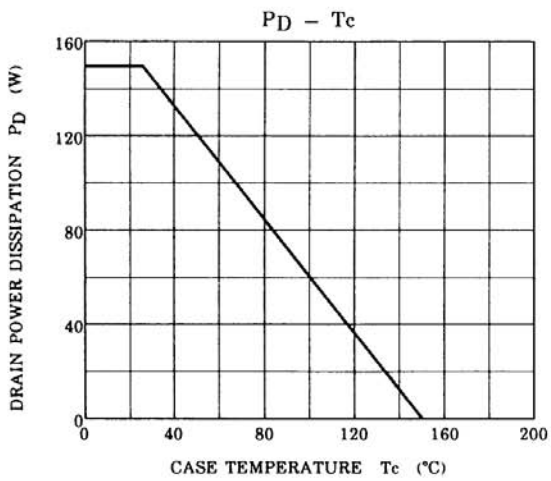
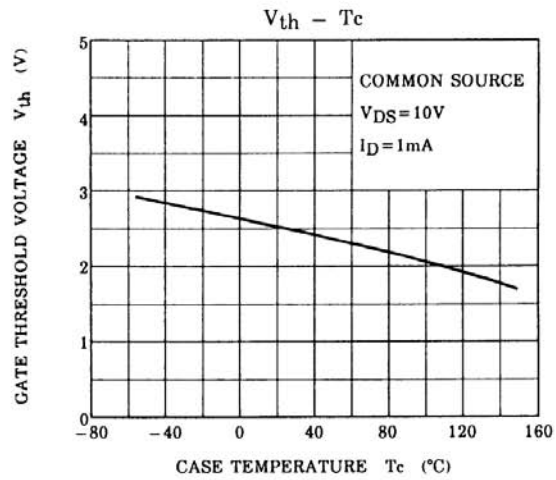
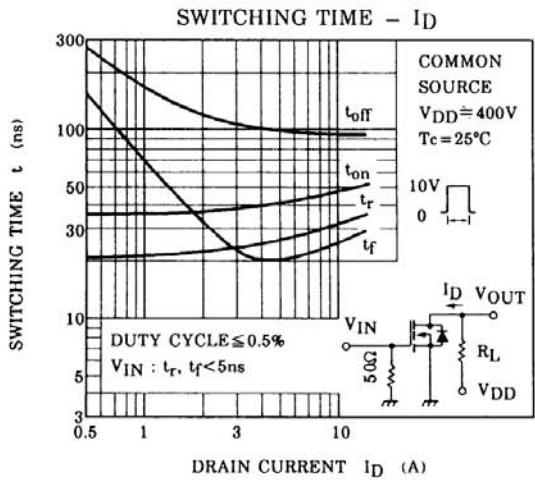
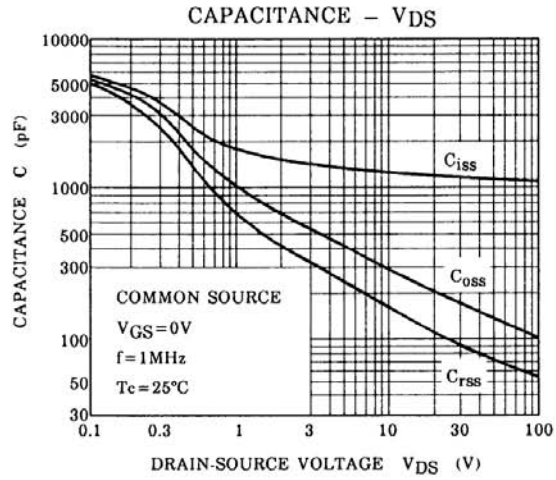
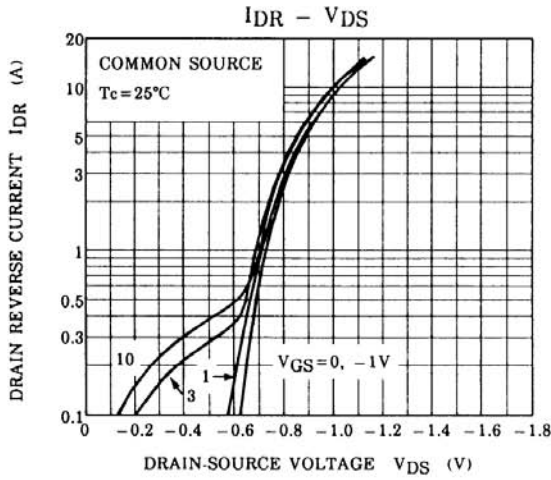
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 25V, V_{DS} = 0V$	–	–	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 720V, V_{GS} = 0V$	–	–	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0V$	900	–	–	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 1mA$	1.5	–	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 4A, V_{GS} = 10V$	–	1.1	1.4	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 20V, I_D = 4A$	2.0	4.0	–	S
Input Capacitance		C_{iss}	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$	–	1300	1800	pF
Reverse Transfer Capacitance		C_{rss}		–	100	150	
Output Capacitance		C_{oss}		–	180	260	
Switching Time	Rise Time	t_r	<p>$V_{GS} = 10V, 0V$ $I_D = 4A$ $R_L = 100\Omega$ $V_{IN} : t_r, t_f < 5ns, V_{DD} = 400V$ $Duty \leq 1\%, t_w = 10\mu s$</p>	–	25	50	ns
	Turn-on Time	t_{on}		–	40	80	
	Fall Time	t_f		–	20	40	
	Turn-off Time	t_{off}		–	100	200	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 400V, V_{GS} = 10V,$ $I_D = 9A$	–	120	240	nC
Gate-Source Charge		Q_{gs}		–	70	–	
Gate-Drain ("Miller") Charge		Q_{gd}		–	50	–	

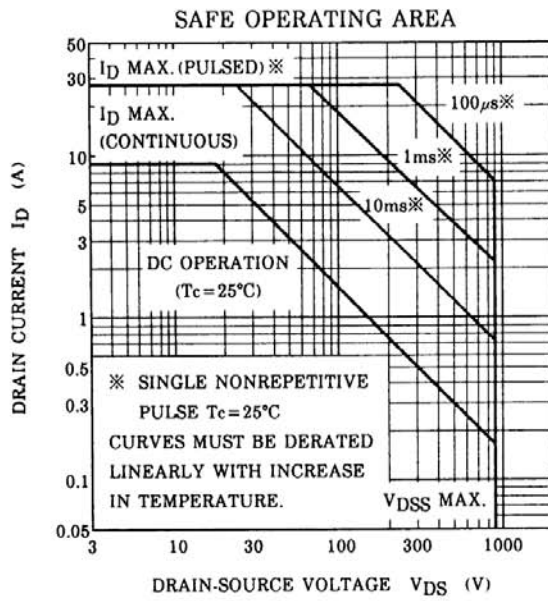
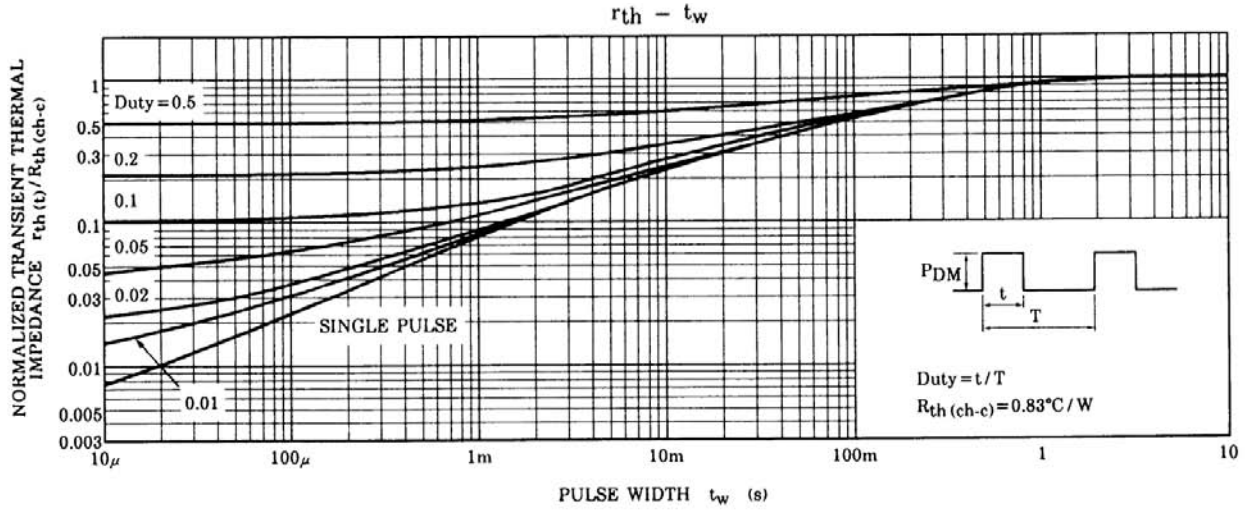
Source-Drain Diode Ratings and Characteristics (Ta = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	–	–	–	9	A
Pulse Drain Reverse Current	I_{DRP}	–	–	–	27	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 9A, V_{GS} = 0V$	–	–	-2.0	V



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Notes

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