



**2SJ643**

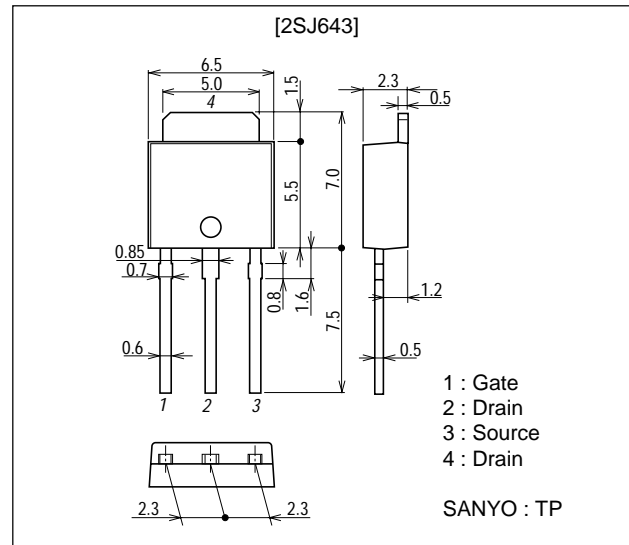
## Ultrahigh-Speed Switching Applications

### Features

- Low ON-resistance.
- 1.8V drive.

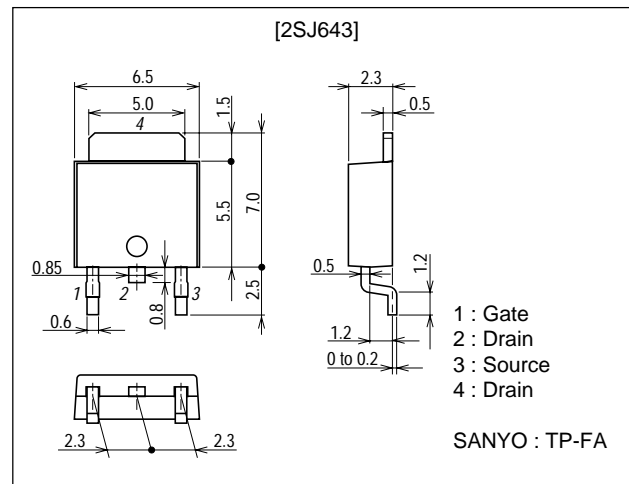
### Package Dimensions

unit : mm  
2083B



### Package Dimensions

unit : mm  
2092B



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## 2SJ643

### Specifications

#### Absolute Maximum Ratings at Ta=25°C

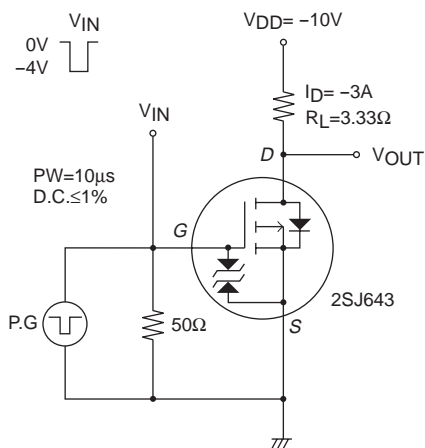
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		-20	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±10	V
Drain Current (DC)	I <sub>D</sub>		-6	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-24	A
Allowable Power Dissipation	P <sub>D</sub>		1	W
		T <sub>c</sub> =25°C	10	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

#### Electrical Characteristics at Ta=25°C

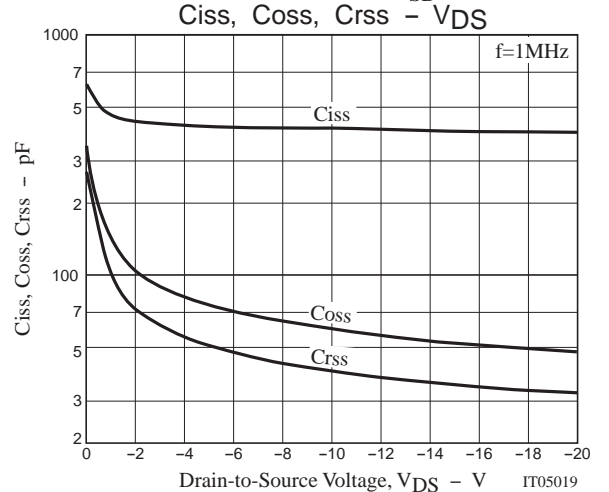
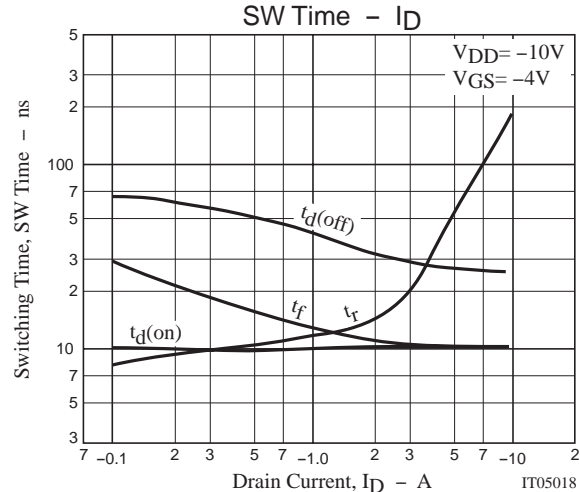
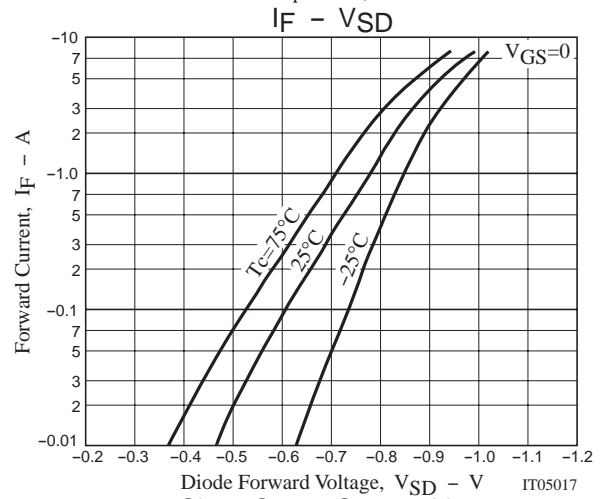
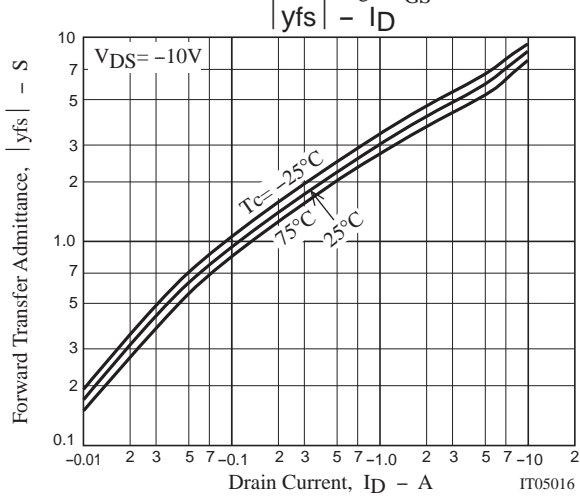
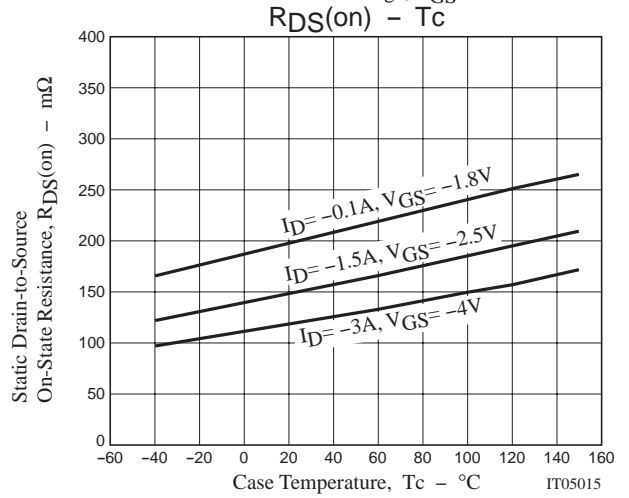
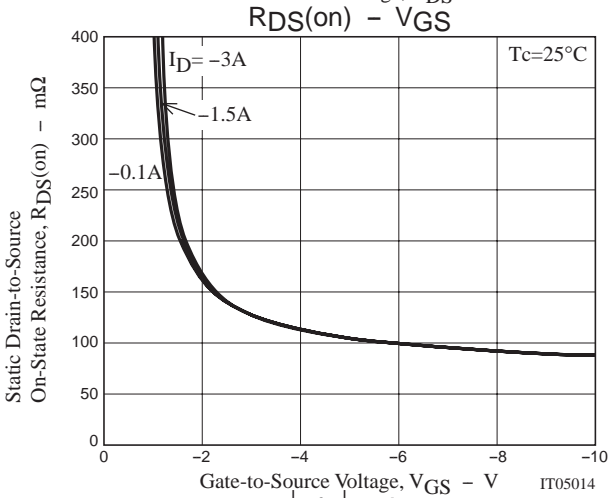
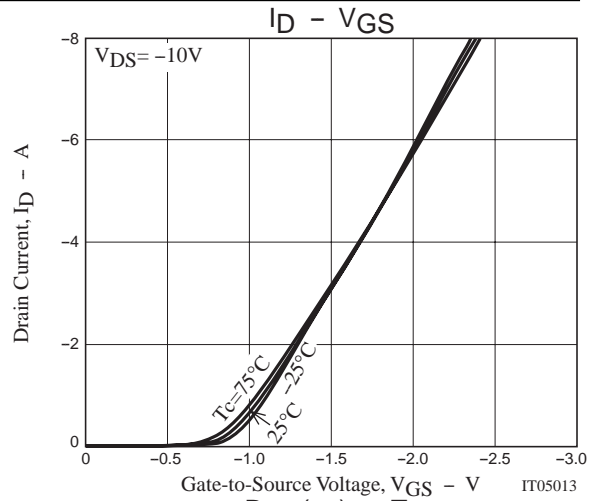
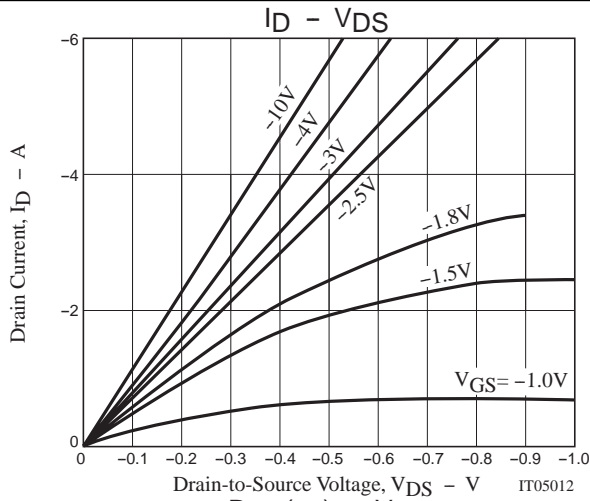
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =-1mA, V <sub>GS</sub> =0	-20			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0			-10	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-1mA	-0.3		-1.0	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-3A	2.1	3		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =-3A, V <sub>GS</sub> =-4V		120	160	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =-1.5A, V <sub>GS</sub> =-2.5V		150	210	mΩ
	R <sub>DS(on)3</sub>	I <sub>D</sub> =-0.1A, V <sub>GS</sub> =-1.8V		200	300	mΩ
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-10V, f=1MHz		410		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =-10V, f=1MHz		60		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> =-10V, f=1MHz		40		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		10		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		20		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		30		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		10		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4V, I <sub>D</sub> =-6A		4.4		nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4V, I <sub>D</sub> =-6A		0.6		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4V, I <sub>D</sub> =-6A		1.2		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-6A, V <sub>GS</sub> =0	-1.0	-1.2		V

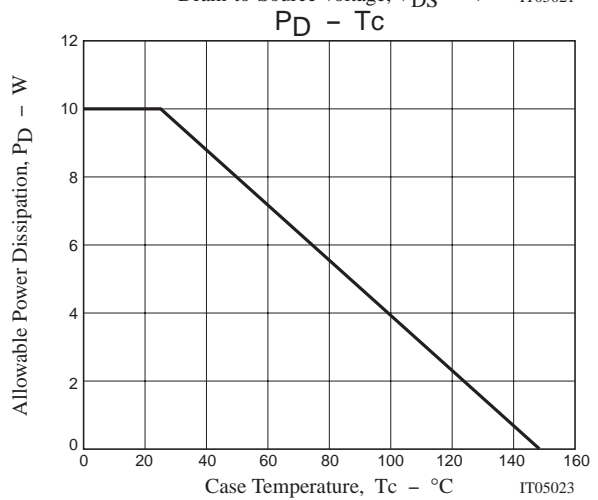
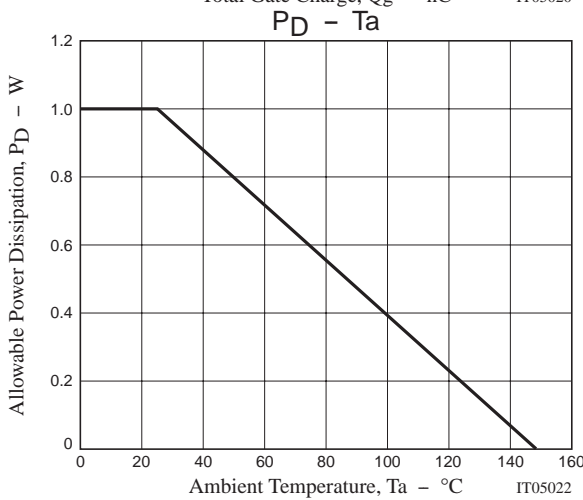
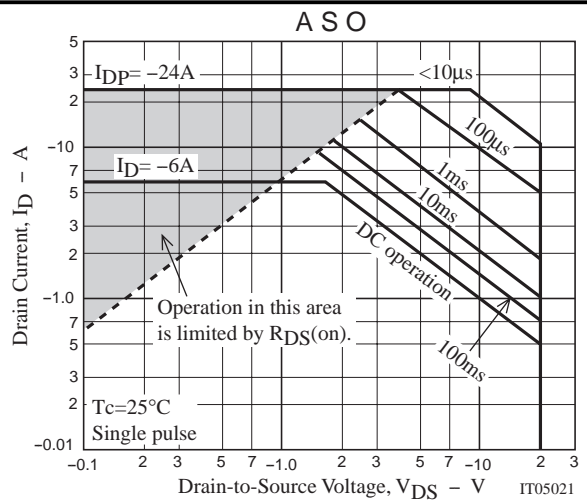
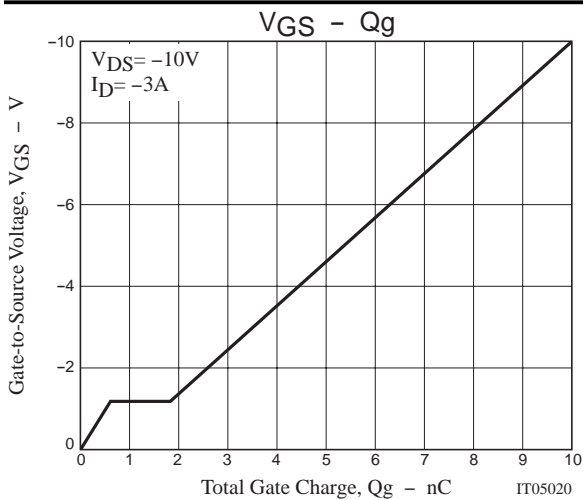
Marking : J643

#### Switching Time Test Circuit



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