Ordering number : ENN5442A

P-Channel Silicon MOSFET

2SJ456

Ultrahigh-Speed Switching Applications

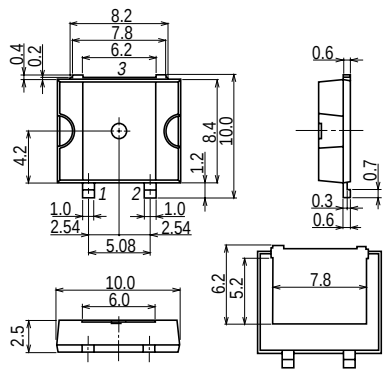
Features

- Low ON-resistance.
- High-speed diode incorporated.
- Enables simplified fabrication, high-density mounting, and miniaturization in end products due to the surface mountable package.

Package Dimensions

unit : mm

2128



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		–250	V
Gate-to-Source Voltage	V_{GSS}		±30	V
Drain Current (DC)	I_D		–9	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	–36	A
Allowable Power Dissipation	P_D	Tc=25°C	50	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		–55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=-1mA, V_{GS}=0	–250			V
Gate-to-Source Breakdown Voltage	$V_{(BR)GSS}$	I_G=±100μA, V_{DS}=0	±30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=–250V, V_{GS}=0			–1.0	mA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±25V, V_{DS}=0			±10	μA
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=–10V, I_D=–1mA	–2.0		–3.0	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=–10V, I_D=–5A	4.8	8.0		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	I_D=–5A, V_{GS}=–10V		0.4	0.55	Ω
Input Capacitance	Ciss	V_{DS}=–20V, f=1MHz		1950		pF
Output Capacitance	Coss	V_{DS}=–20V, f=1MHz		505		pF
Reverse Transfer Capacitance	Crss	V_{DS}=–20V, f=1MHz		230		pF

Continued on next page.

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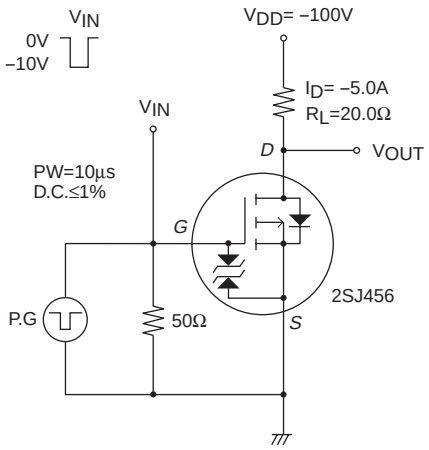
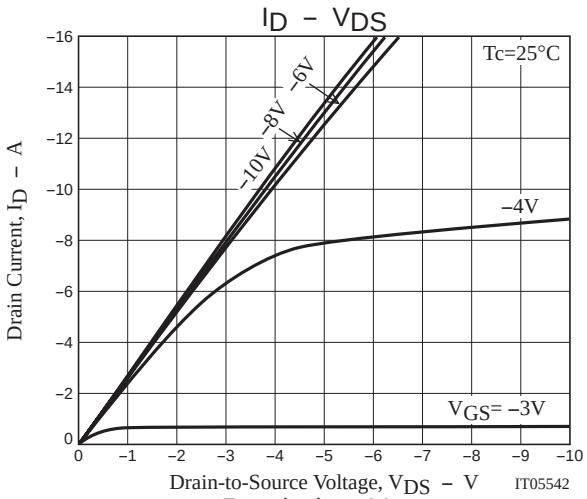
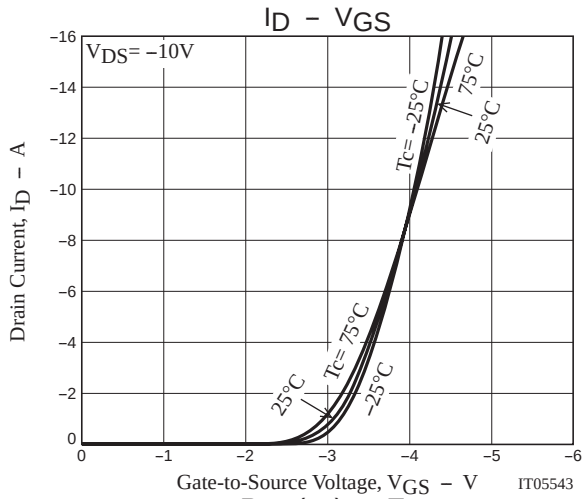
Continued from preceding page.

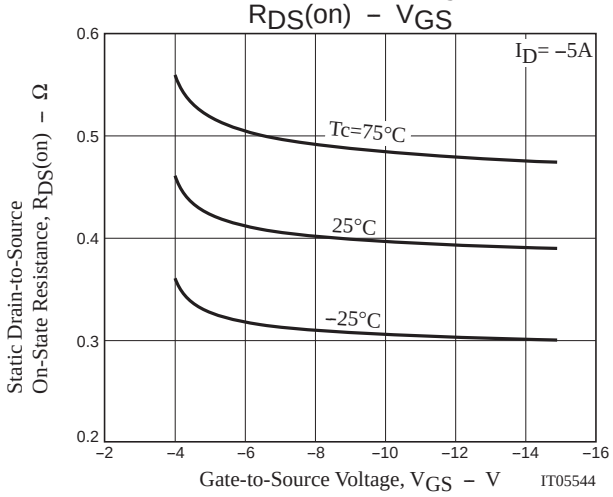
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		28		ns
Rise Time	t_{r}	See specified Test Circuit.		125		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.		460		ns
Fall Time	t_{f}	See specified Test Circuit.		160		ns
Diode Forward Voltage	V_{SD}	I_S=−9A, V_{GS}=0		−1.0	−1.5	V
Diode Reverse Recovery Time	t_{rr}	I_S=−9A, di / dt=100A / μs		180		ns

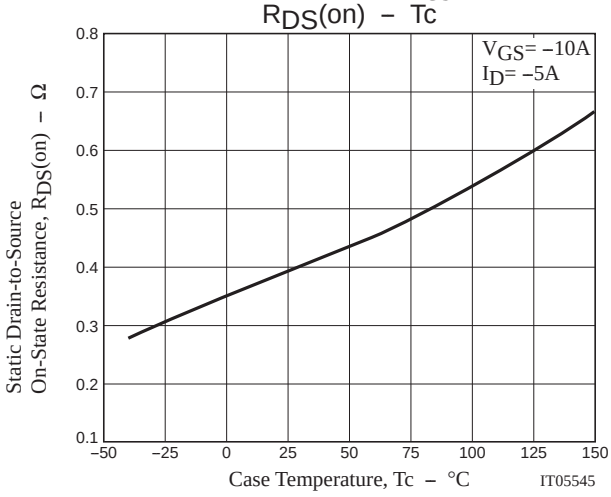
Switching Time Test Circuit

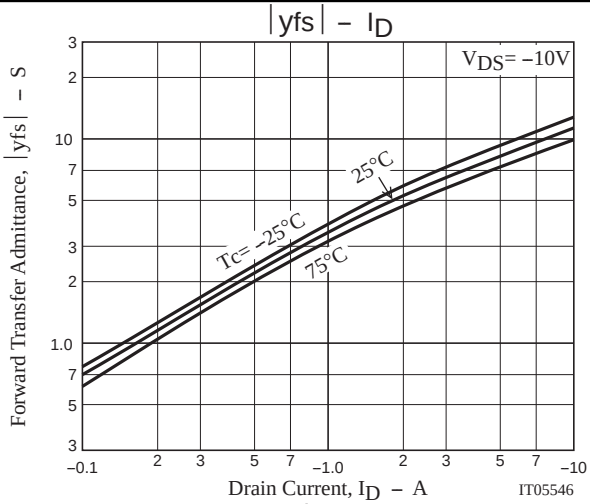


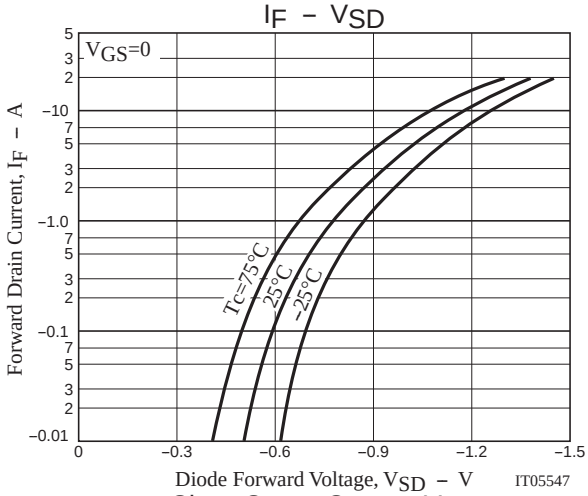


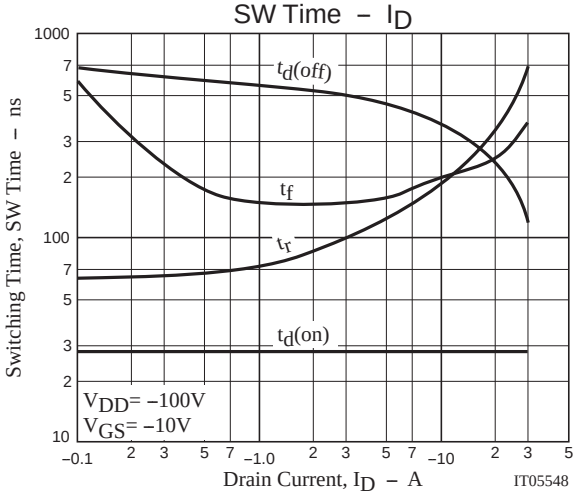


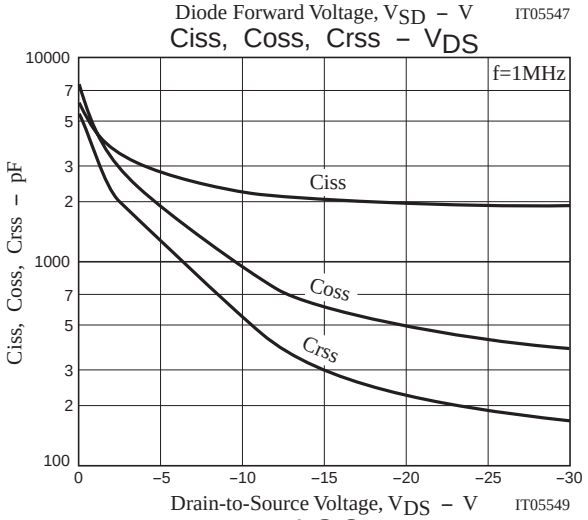


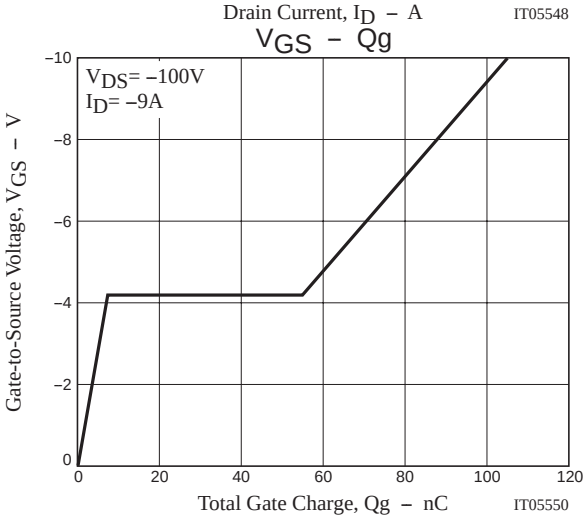


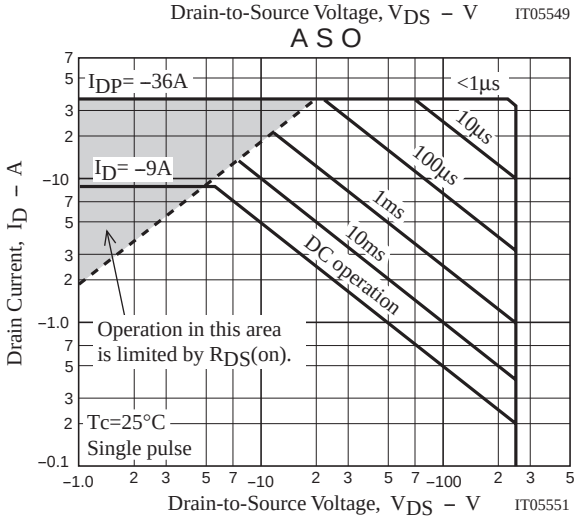

|yfs| – ID
VDS= –10V
25°C
Tc= –25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT05546

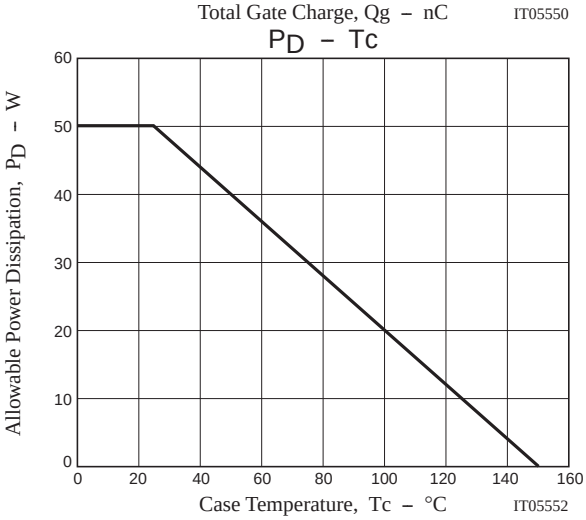

IF – VSD
VGS=0
Tc=75°C
25°C
–25°C
Forward Drain Current, IF – A
Diode Forward Voltage, VSD – V
IT05547


SW Time – ID
td(off)
tf
tr
td(on)
VDD= –100V
VGS= –10V
Switching Time, SW Time – ns
Drain Current, ID – A
IT05548


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT05549


VGS – Qg
VDS= –100V
ID= –9A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT05550


A S O
IDP= –36A
<1µs
10µs
100µs
1ms
10ms
DC operation
ID= –9A
Operation in this area
is limited by RDS(on).
Tc=25°C
Single pulse
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT05551


PD – Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT05552