Ordering number : ENA1742

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

SFT1446 — General-Purpose Switching Device Applications

Features

- ON-resistance $R_{DS}(on)1=39m\Omega(typ)$
- 4V drive
- Input Capacitance Ciss=750pF(typ)
- Halogen free compliance

Specifications

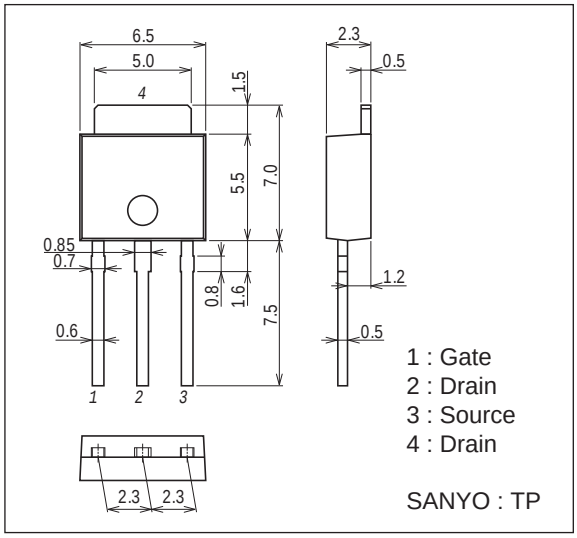
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		60	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		20	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	80	A
Allowable Power Dissipation	P_D		1	W
		Tc=25°C	23	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Package Dimensions

unit : mm (typ)

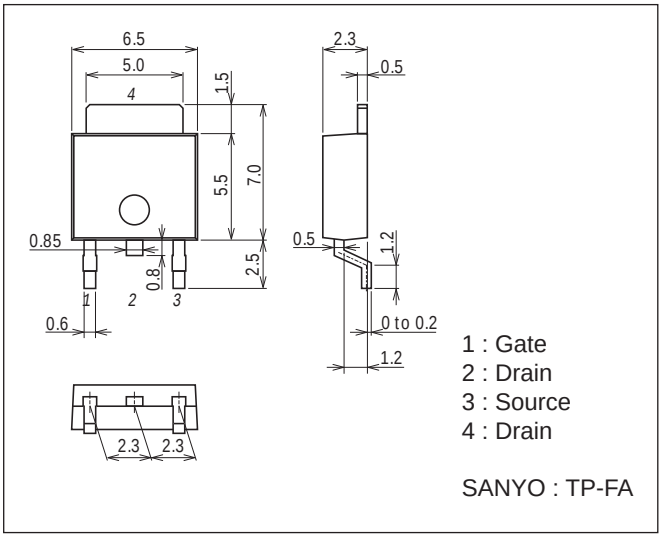
7518-004



Package Dimensions

unit : mm (typ)

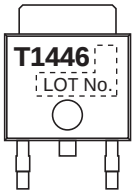
7003-004



Product & Package Information

- Package : TP
- JEITA, JEDEC : SC-64, TO-251, SOT553
- Minimum Packing Quantity : 500 pcs./bag

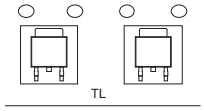
Marking(TP, TP-FA)



Product & Package Information

- Package : TP-FA
- JEITA, JEDEC : SC-63, TO-252, SOT428
- Minimum Packing Quantity : 700 pcs./reel

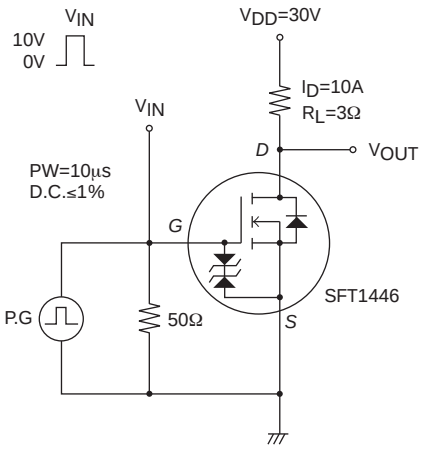
Taping Type(TP-FA) : TL

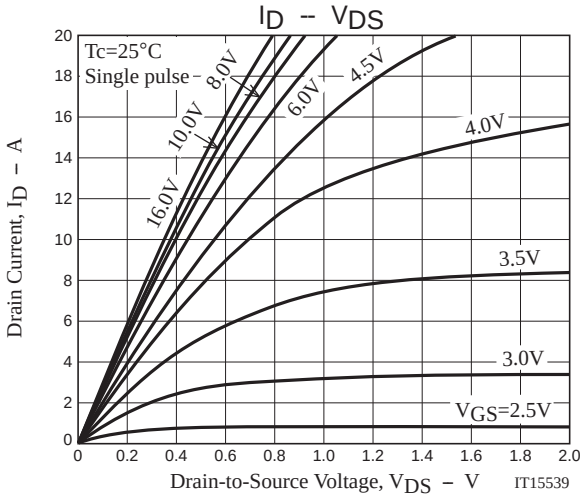


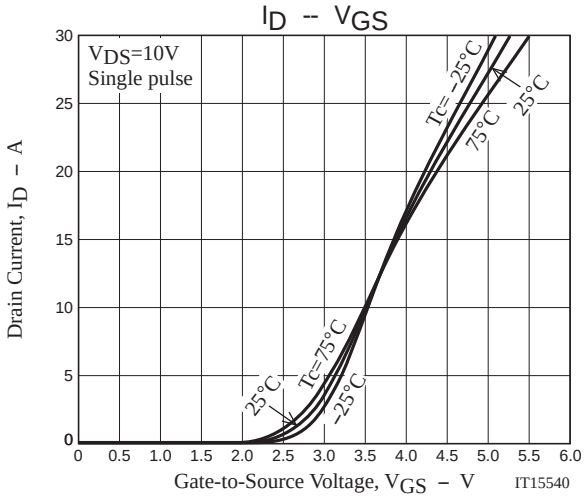
Electrical Characteristics at Ta=25°C

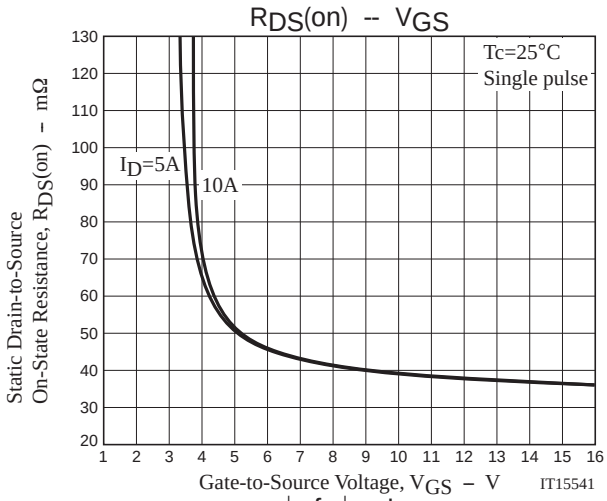
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=1mA	1.2		2.6	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=10A		7.0		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=10A, V_{GS}=10V		39	51	mΩ
	R_{DS}(on)2	I_D=5A, V_{GS}=4.5V		54	76	mΩ
	R_{DS}(on)3	I_D=5A, V_{GS}=4V		62	87	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		750		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		59		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		47		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		8.5		ns
Rise Time	t_r	See specified Test Circuit.		31		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		60		ns
Fall Time	t_f	See specified Test Circuit.		48		ns
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_D=14A		16		nC
Gate-to-Source Charge	Qgs	V_{DS}=30V, V_{GS}=10V, I_D=14A		3.3		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=30V, V_{GS}=10V, I_D=14A		3.6		nC
Diode Forward Voltage	V_{SD}	I_S=20A, V_{GS}=0V		1.01	1.2	V

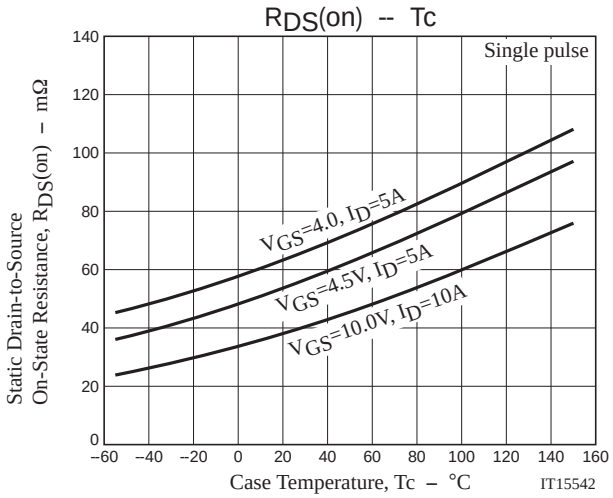
Switching Time Test Circuit

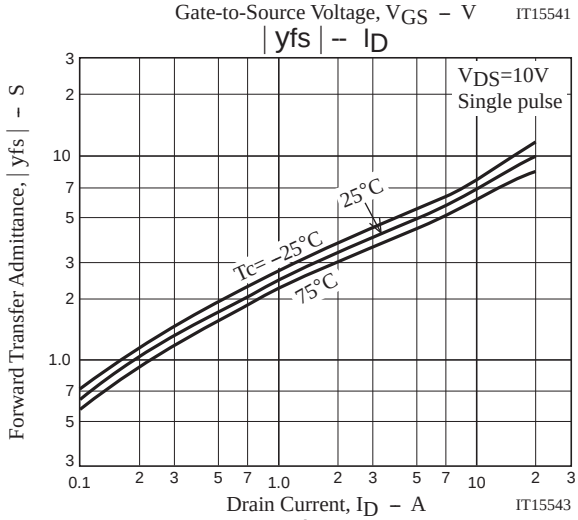


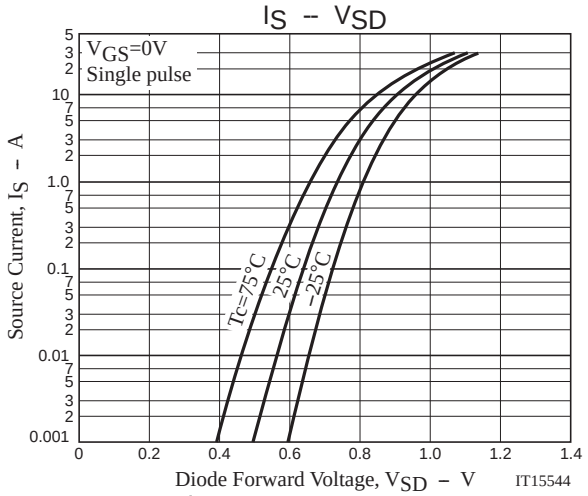


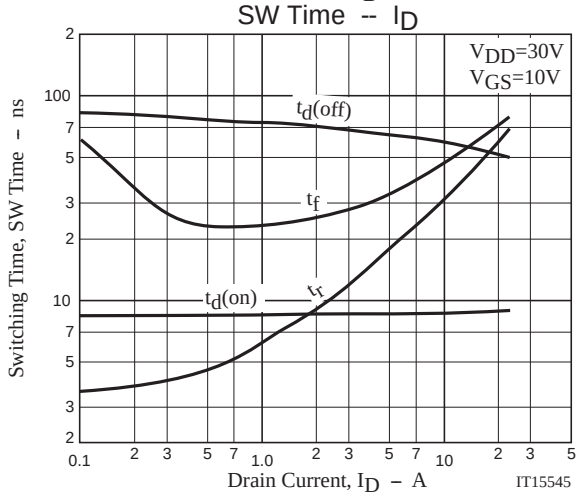


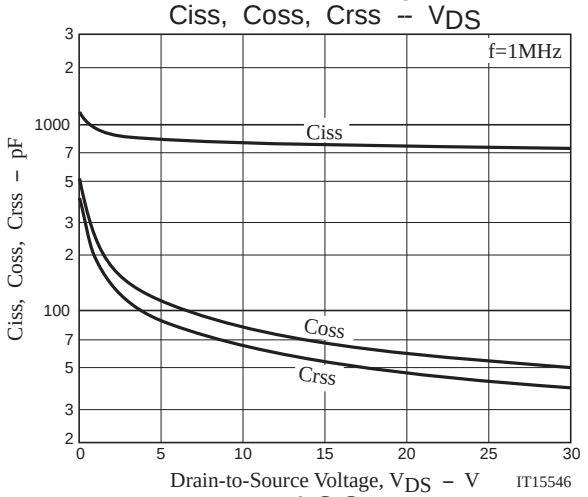

RDS(on) -- VGS
Tc=25°C
Single pulse
ID=5A
10A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT15541

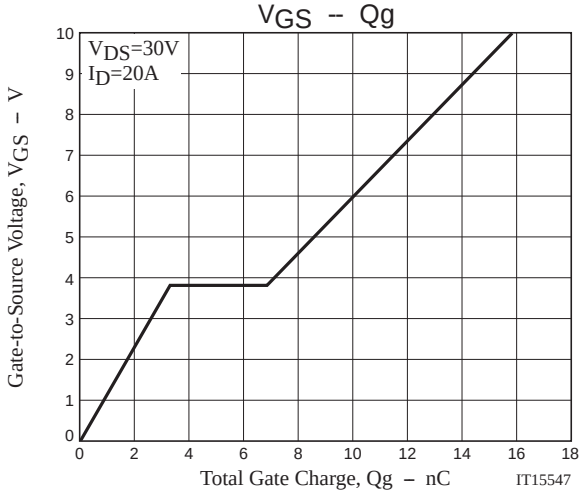

RDS(on) -- Tc
Single pulse
VGS=4.0, ID=5A
VGS=4.5V, ID=5A
VGS=10.0V, ID=10A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT15542

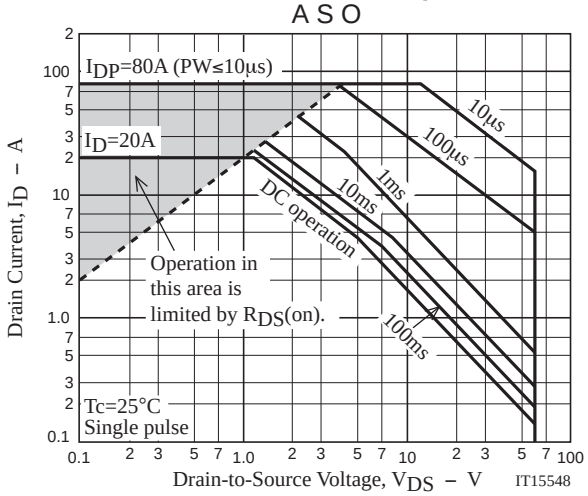

| yfs | -- ID
VDS=10V
Single pulse
25°C
Tc= –25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT15543

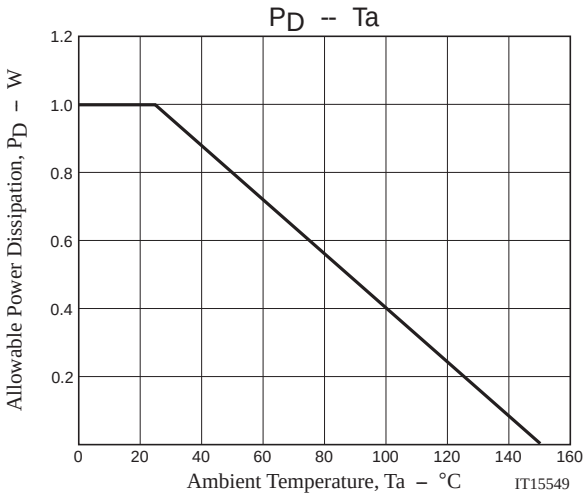

IS -- VSD
VGS=0V
Single pulse
Tc=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT15544

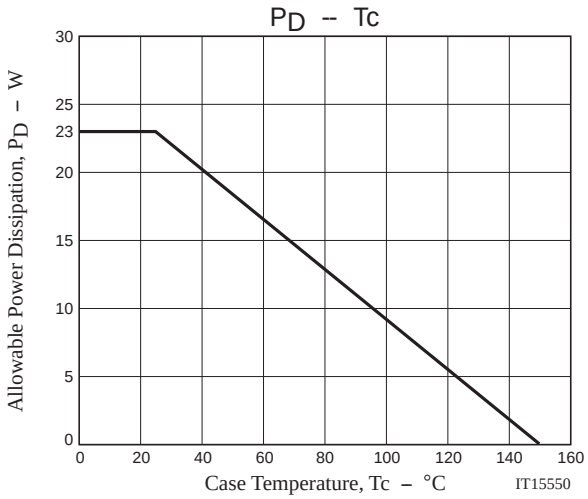

SW Time -- ID
VDD=30V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT15545


Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT15546


VGS -- Qg
VDS=30V
ID=20A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT15547


ASO
IDP=80A (PW≤10μs)
ID=20A
10μs
100μs
1ms
10ms
DC operation
100ms
Operation in this area is limited by RDS(on).
Tc=25°C
Single pulse
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT15548





Note on usage : Since the SFT1446 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of June, 2010. Specifications and information herein are subject to change without notice.