2SK3708 Datasheet

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DiGi Electronics Part Number	2SK3708-DG
Manufacturer	onsemi
Manufacturer Product Number	2SK3708
Description	MOSFET N-CH 100V 30A TO220ML
Detailed Description	N-Channel 100 V 30A (Ta) 2W (Ta), 30W (Tc) Through Hole TO-220ML

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RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
2SK3708	onsemi
Series:	Product Status:
-	Obsolete
FET Type:	Technology:
N-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
100 V	30A (Ta)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
4V, 10V	33mOhm @ 15A, 10V
Vgs(th) (Max) @ Id:	Gate Charge (Qg) (Max) @ Vgs:
-	73 nC @ 10 V
Vgs (Max):	Input Capacitance (Ciss) (Max) @ Vds:
±20V	4200 pF @ 20 V
FET Feature:	Power Dissipation (Max):
-	2W (Ta), 30W (Tc)
Operating Temperature:	Mounting Type:
150°C (TJ)	Through Hole
Supplier Device Package:	Package / Case:
TO-220ML	TO-220-3 Full Pack
Base Product Number:	
2SK3708	

Environmental & Export classification

Moisture Sensitivity Level (MSL):	REACH Status:
1 (Unlimited)	REACH Unaffected
ECCN:	HTSUS:
EAR99	8541.29.0095

Ordering number : ENN7707

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DATA SHEET

2SK3708 — N-Channel Silicon MOSFET General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- 4V drive.
- Motor driver, DC / DC converter.
- Avalanche resistance guarantee.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		100	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		30	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	120	A
Allowable Power Dissipation	P_D		2.0	W
		Tc=25°C	30	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		–55 to +150	°C
Avalanche Energy (Single Pulse) *1	E_{AS}		281	mJ
Avalanche Current *2	I_{AV}		30	A

*1 V_{DD}=20V, L=500μH, I_{AV}=30A

*2 L≤500μH, single pulse

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	100			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}= ±16V, V_{DS}=0			±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=15A	19.5	28		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=15A, V_{GS}=10V		25	33	mΩ
	$R_{DS}(on)2$	I_D=15A, V_{GS}=4V		30	42	mΩ

Marking : K3708

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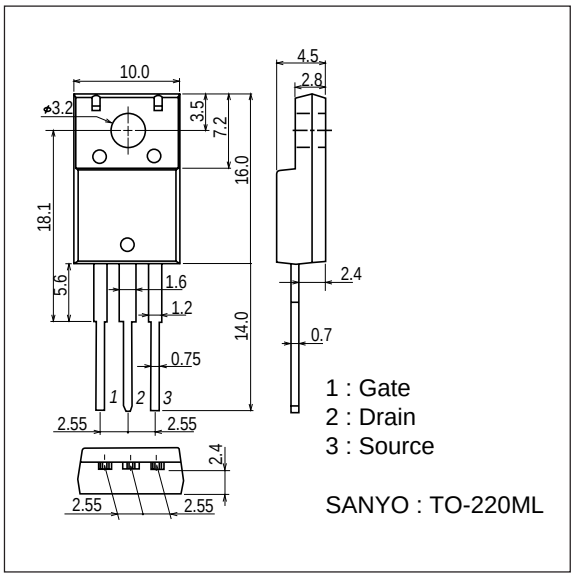
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		4200		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		300		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		250		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		29.5		ns
Rise Time	t_{r}	See specified Test Circuit.		65		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.		310		ns
Fall Time	t_{f}	See specified Test Circuit.		105		ns
Total Gate Charge	Qg	V_{DS}=50V, V_{GS}=10V, I_{D}=30A		73		nC
Gate-to-Source Charge	Qgs	V_{DS}=50V, V_{GS}=10V, I_{D}=30A		12.5		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=50V, V_{GS}=10V, I_{D}=30A		16		nC
Diode Forward Voltage	V_{SD}	I_{S}=30A, V_{GS}=0		0.92	1.2	V

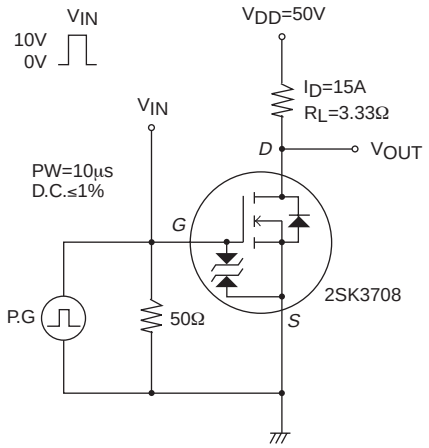
Package Dimensions

unit : mm

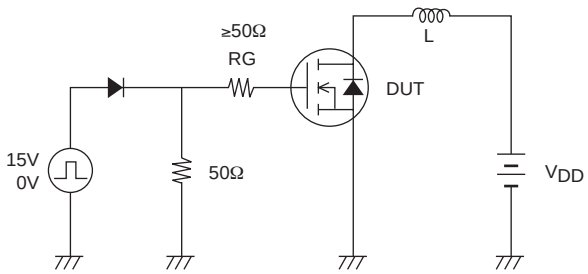
2063A



Switching Time Test Circuit



Unclamped Inductive Test Circuit



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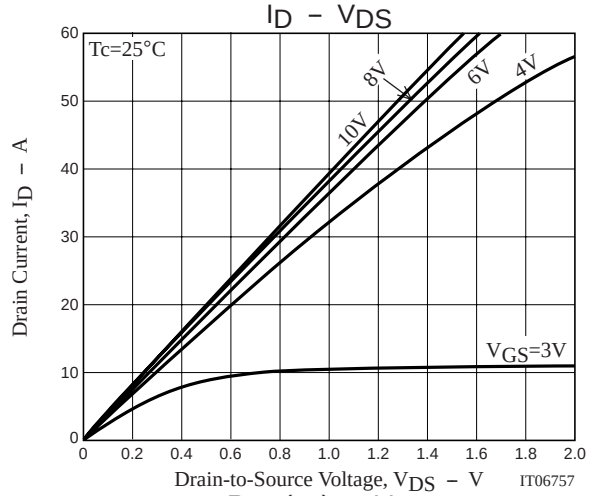
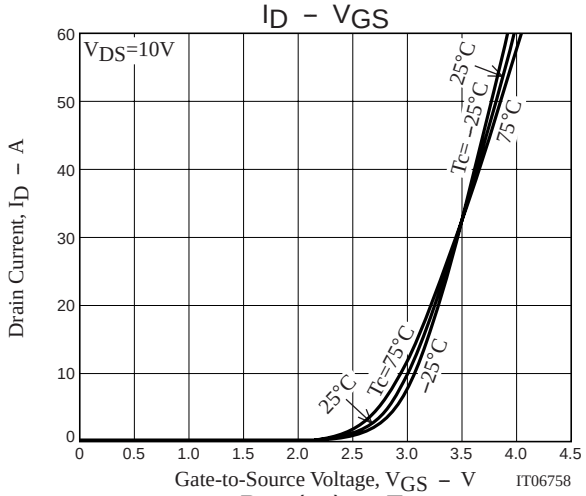
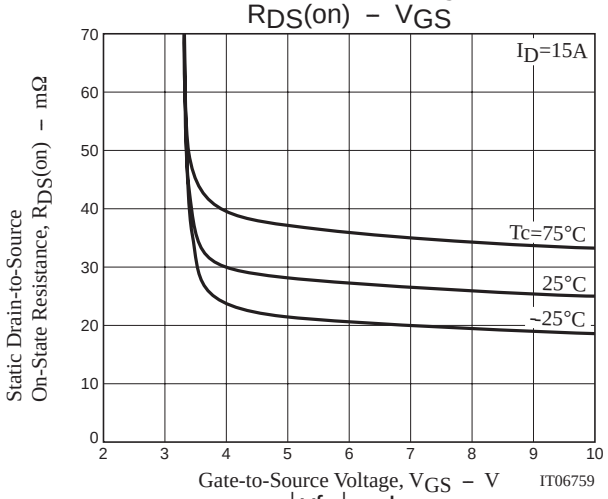
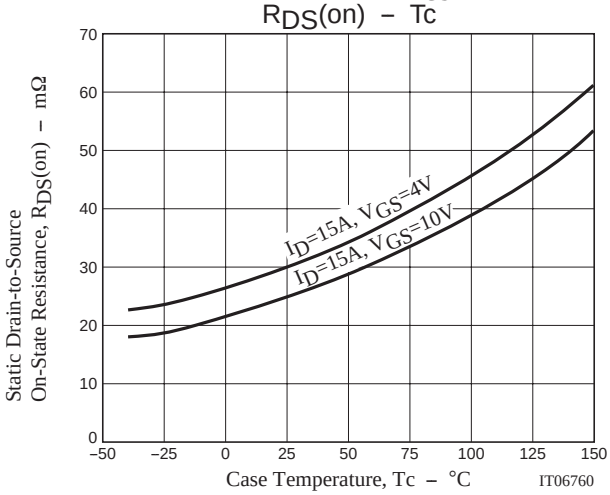
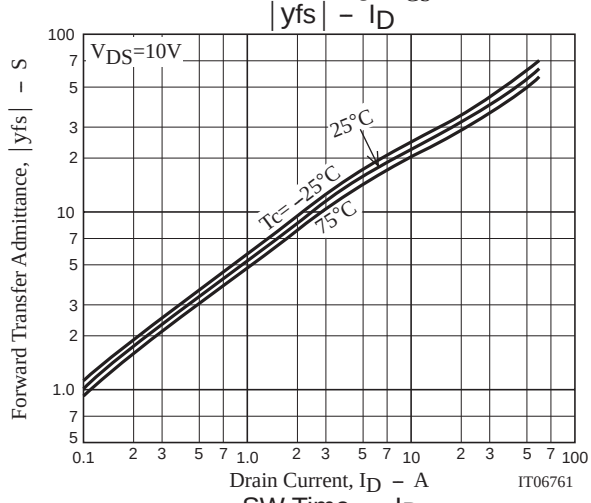
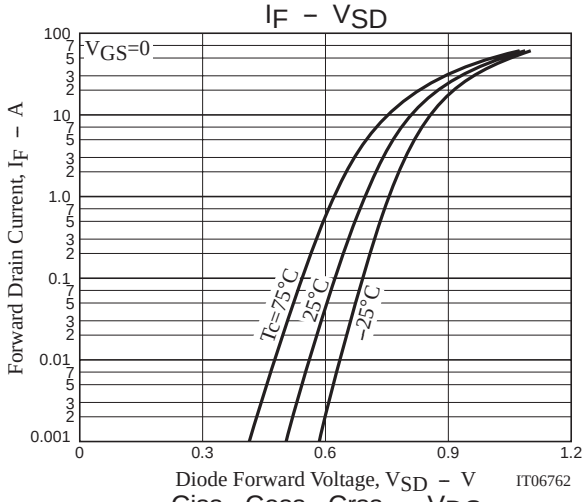

ID – VDS
Tc=25°C
8V
10V
6V
4V
VGS=3V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT06757

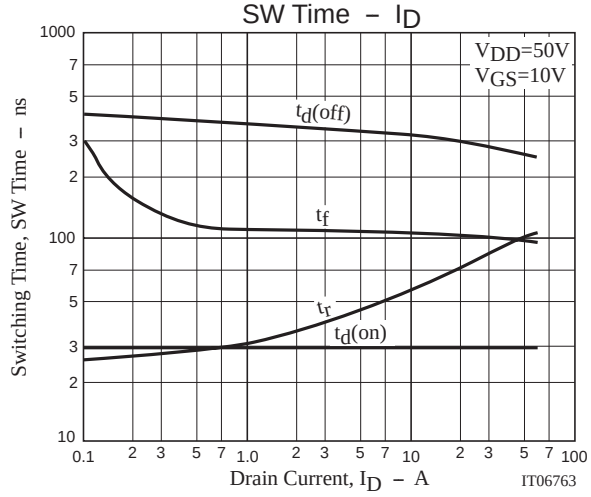

ID – VGS
VDS=10V
25°C
Tc= –25°C
75°C
25°C
Tc=75°C
–25°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT06758

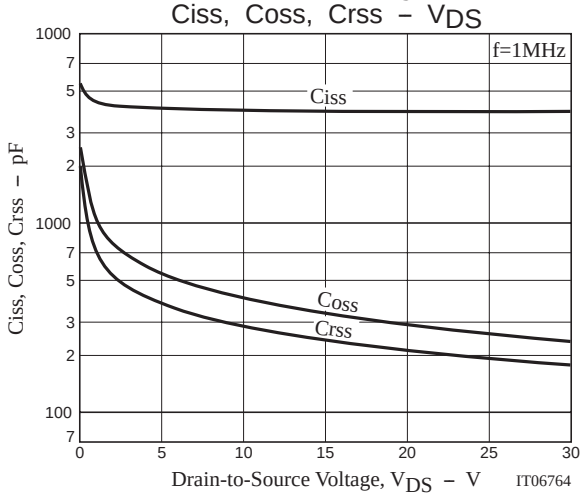

RDS(on) – VGS
ID=15A
Tc=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT06759


RDS(on) – Tc
ID=15A, VGS=4V
ID=15A, VGS=10V
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT06760

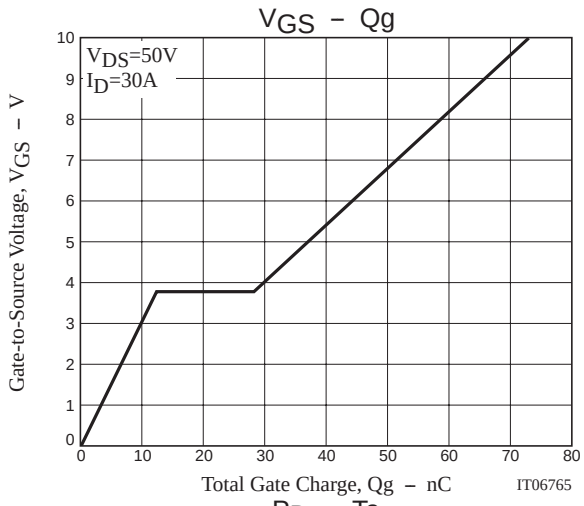

|yfs| – ID
VDS=10V
25°C
Tc= –25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT06761

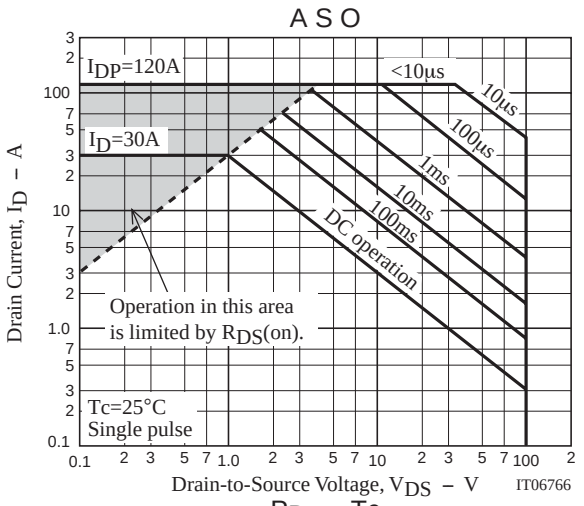

IF – VSD
VGS=0
Tc=75°C
25°C
–25°C
Forward Drain Current, IF – A
Diode Forward Voltage, VSD – V
IT06762

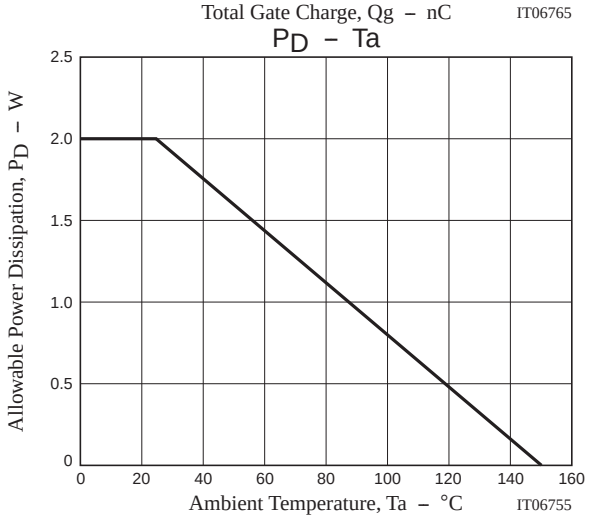

SW Time – ID
VDD=50V
VGS=10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT06763

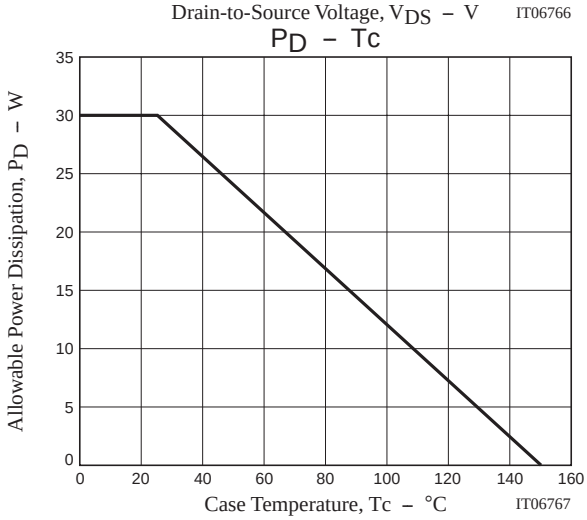

Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT06764

2SK3708









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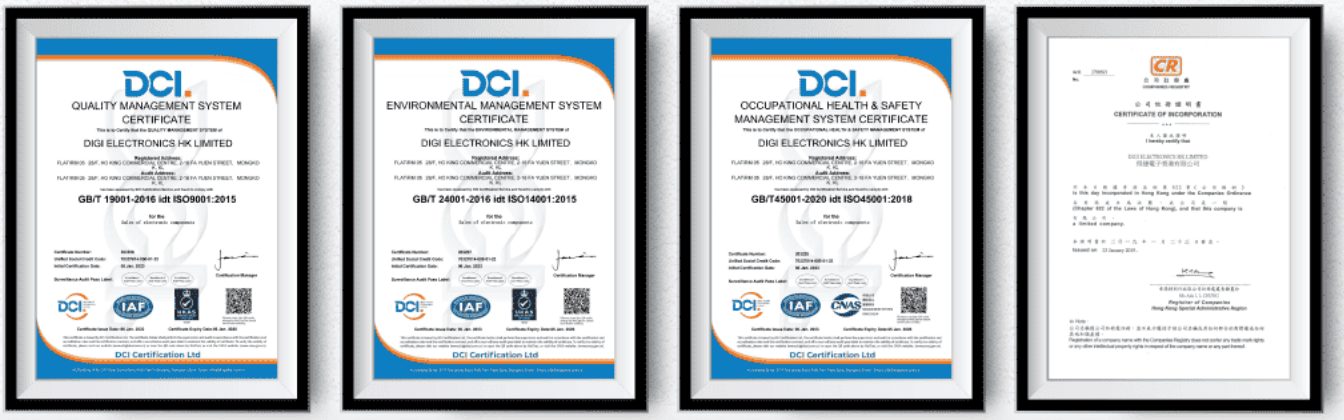

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