EMH2604-VB Datasheet

N-and P-Channel 20V (D-S) MOSFET

Features

- Nch + Pch MOSFET
- ON-resistance Nch : $R_{DS}(on)1$=34mΩ(typ.)
  Pch : $R_{DS}(on)1$=65mΩ(typ.)
- 1.8V drive
- Halogen free compliance

Specifications

Absolute Maximum Ratings at Ta=25°C

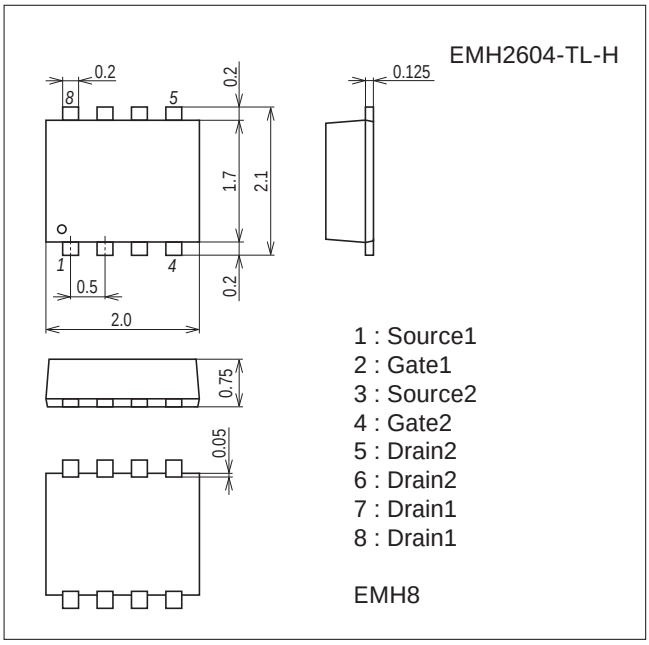
Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V_{DSS}		20	−20	V
Gate-to-Source Voltage	V_{GSS}		±10	±10	V
Drain Current (DC)	I_D		4	−3	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	20	−20	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm²×0.8mm) 1unit	1.0		W
Total Dissipation	P_T	When mounted on ceramic substrate (900mm²×0.8mm)	1.2		W
Channel Temperature	Tch		150		°C
Storage Temperature	Tstg		−55 to +150		°C

This product is designed to “ESD immunity < 200V*”, so please take care when handling.
* Machine Model

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

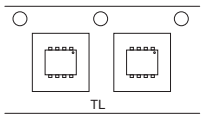
unit : mm (typ)
7045-002



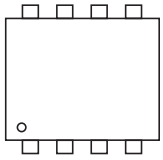
Product & Package Information

- Package : EMH8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

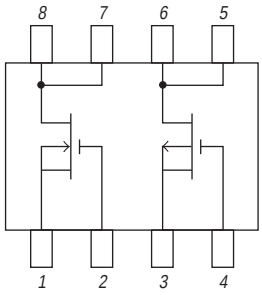
Packing Type : TL



Marking



Electrical Connection

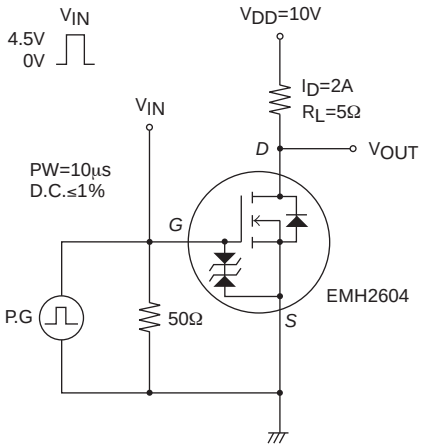


Electrical Characteristics at Ta=25°C

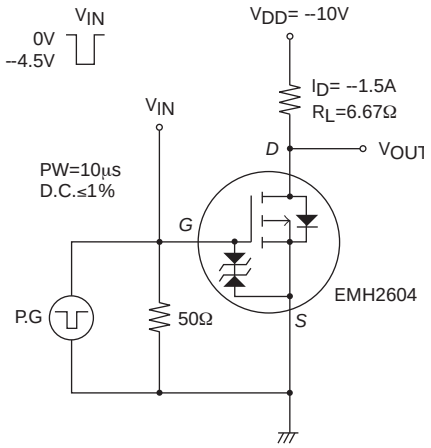
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=1mA	0.4		1.3	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=2A		3.4		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=4A, V_{GS}=4.5V		34	45	mΩ
	R_{DS}(on)2	I_D=1A, V_{GS}=2.5V		49	67	mΩ
	R_{DS}(on)3	I_D=0.5A, V_{GS}=1.8V		74	115	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		345		pF
Output Capacitance	Coss			67		pF
Reverse Transfer Capacitance	Crss			52		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		9.2		ns
Rise Time	t_r			60		ns
Turn-OFF Delay Time	t_d(off)			30		ns
Fall Time	t_f			38		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=4.5V, I_D=4A		4.7		nC
Gate-to-Source Charge	Qgs			0.65		nC
Gate-to-Drain “Miller” Charge	Qgd			1.6		nC
Diode Forward Voltage	V_{SD}	I_S=4A, V_{GS}=0V		0.8	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=−1mA, V_{GS}=0V	−20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−20V, V_{GS}=0V			−1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−1mA	−0.4		−1.3	V
Forward Transfer Admittance	| yfs |	V_{DS}=−10V, I_D=−1.5A		3.6		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−3A, V_{GS}=−4.5V		65	85	mΩ
	R_{DS}(on)2	I_D=−1A, V_{GS}=−2.5V		98	137	mΩ
	R_{DS}(on)3	I_D=−0.5A, V_{GS}=−1.8V		155	235	mΩ
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		320		pF
Output Capacitance	Coss			66		pF
Reverse Transfer Capacitance	Crss			50		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		7.1		ns
Rise Time	t_r			21		ns
Turn-OFF Delay Time	t_d(off)			37		ns
Fall Time	t_f			32		ns
Total Gate Charge	Qg	V_{DS}=−10V, V_{GS}=−4.5V, I_D=−3A		4.0		nC
Gate-to-Source Charge	Qgs			0.6		nC
Gate-to-Drain “Miller” Charge	Qgd			1.1		nC
Diode Forward Voltage	V_{SD}	I_S=−3A, V_{GS}=0V		−0.83	−1.2	V

Switching Time Test Circuit

[N-channel]

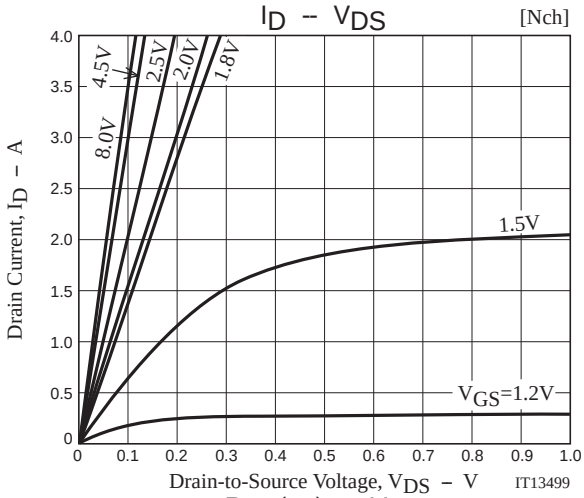


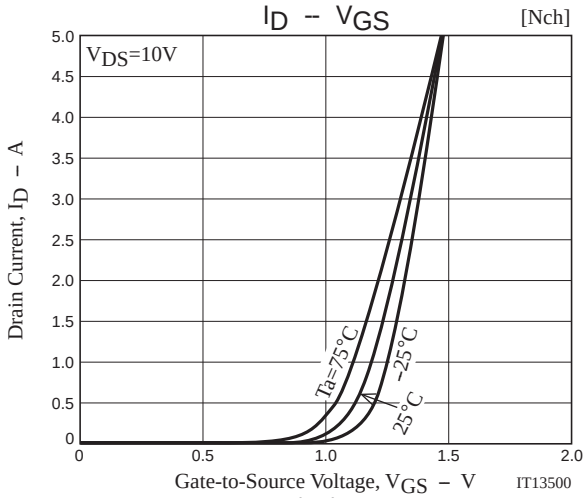
[P-channel]

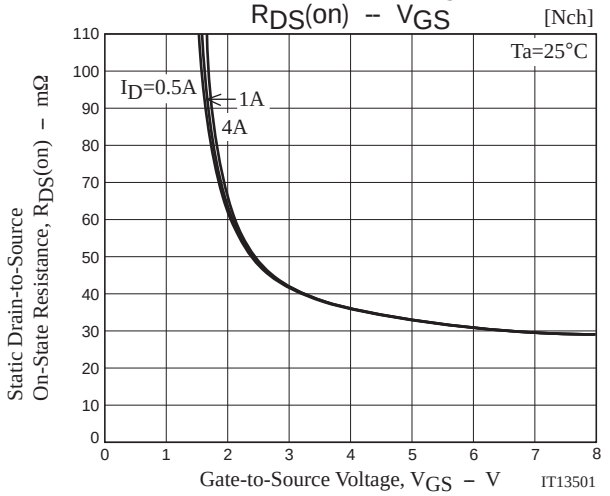


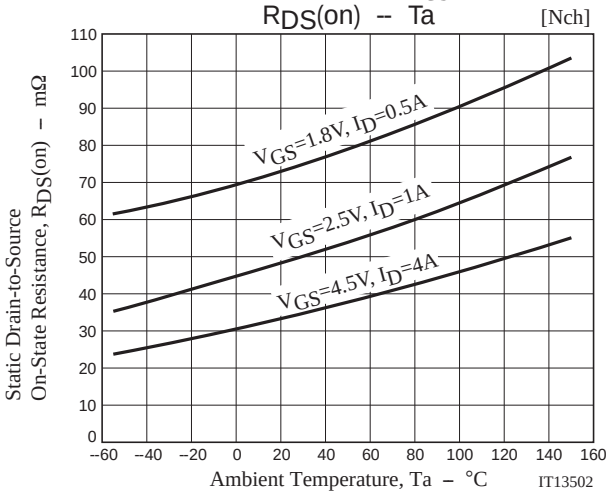
Ordering Information

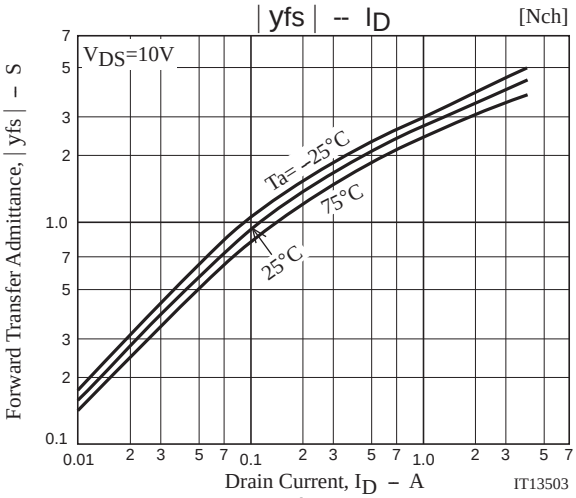
Device	Package	Shipping	memo
EMH2604-TL-H	EMH8	3,000pcs./reel	Pb Free and Halogen Free

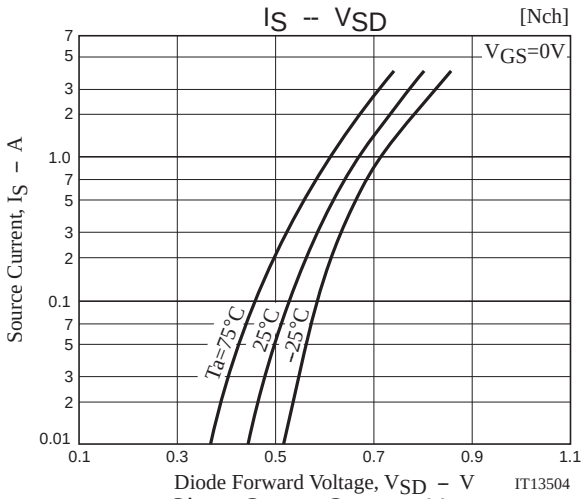


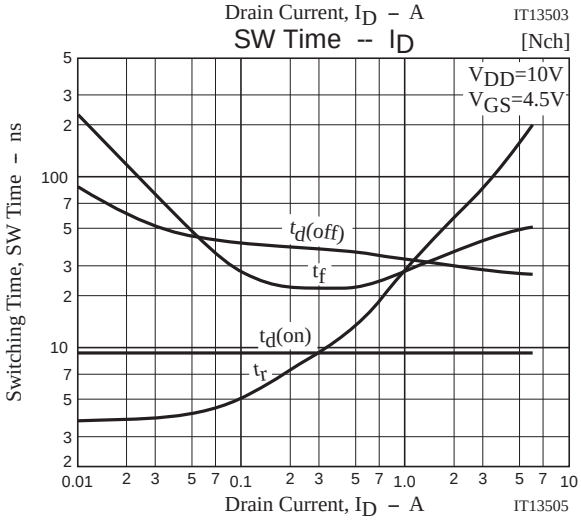


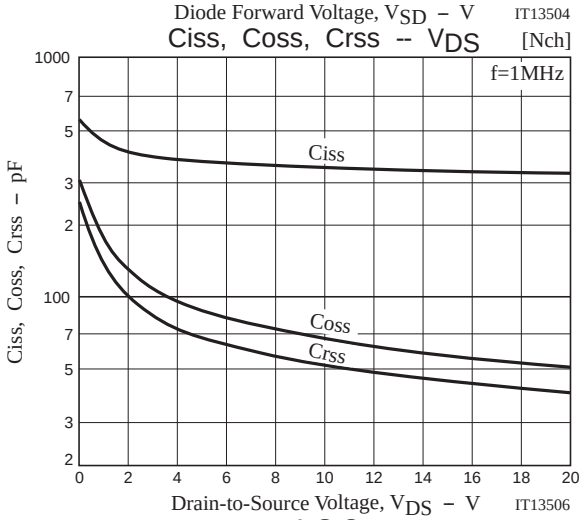


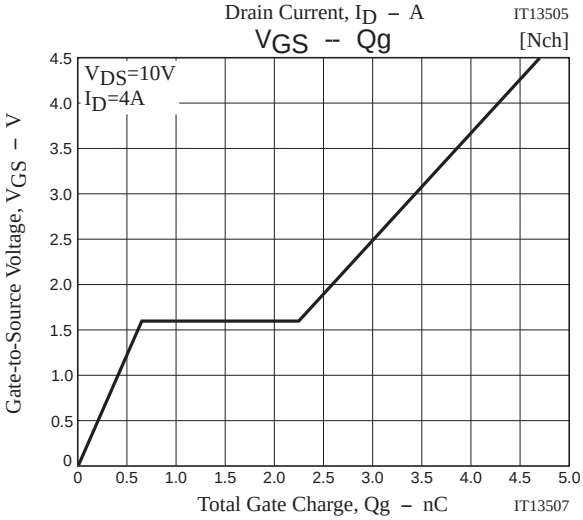


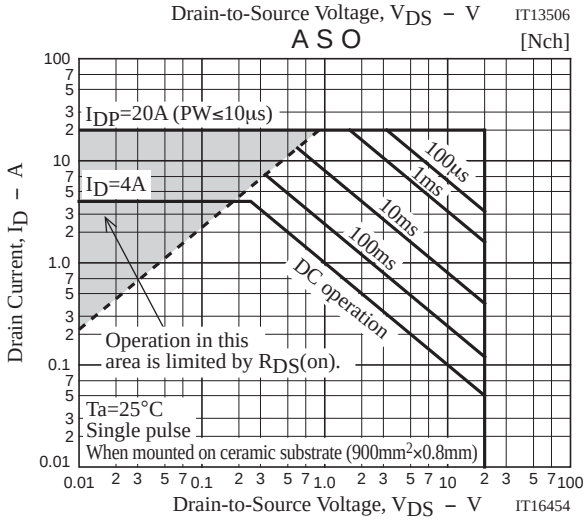

| yfs | -- ID
[Nch]
VDS=10V
Ta=-25°C
75°C
25°C
Forward Transfer Admittance, | yfs | - S
Drain Current, ID - A
IT13503

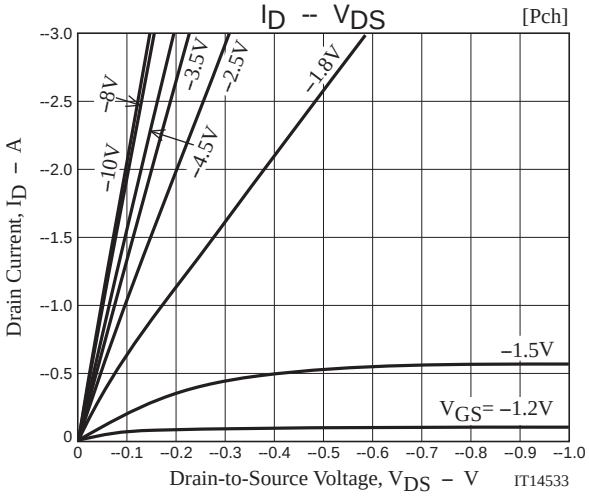

IS -- VSD
[Nch]
VGS=0V
Ta=75°C
25°C
-25°C
Source Current, IS - A
Diode Forward Voltage, VSD - V
IT13504

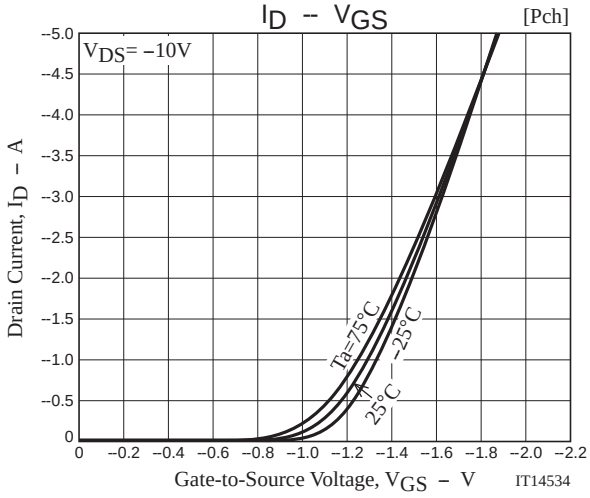

SW Time -- ID
[Nch]
VDD=10V
VGS=4.5V
td(off)
tf
td(on)
tr
Switching Time, SW Time - ns
Drain Current, ID - A
IT13505

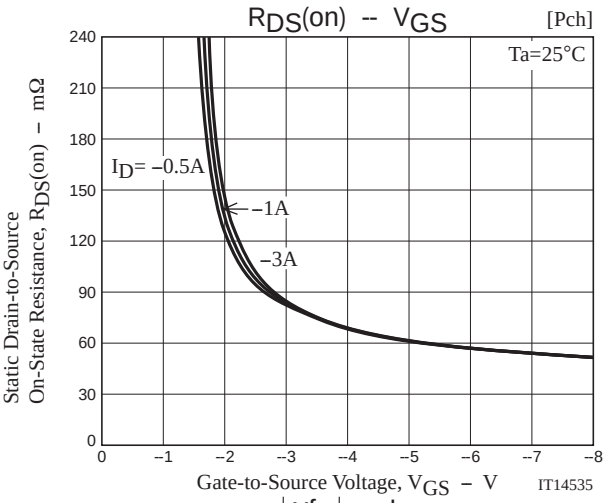

Ciss, Coss, Crss -- VDS
[Nch]
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss - pF
Drain-to-Source Voltage, VDS - V
IT13506

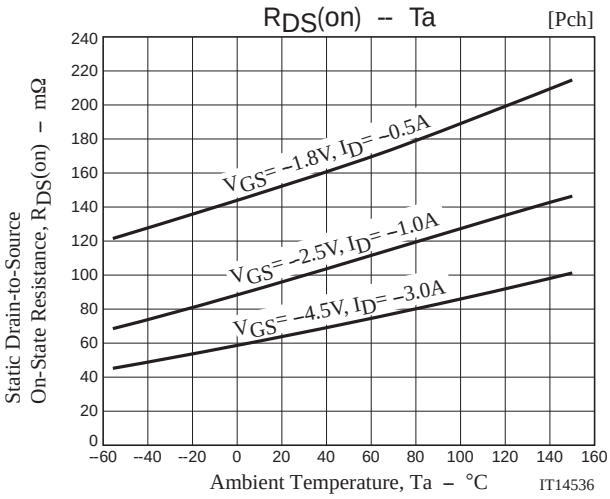

VGS -- Qg
[Nch]
VDS=10V
ID=4A
Gate-to-Source Voltage, VGS - V
Total Gate Charge, Qg - nC
IT13507

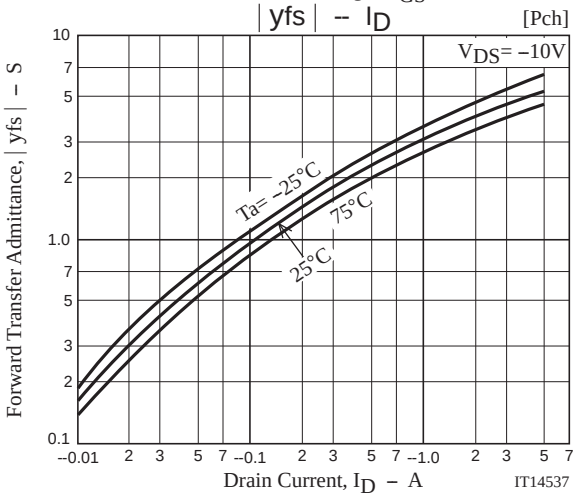

A S O
[Nch]
IDP=20A (PW≤10μs)
ID=4A
100μs
1ms
10ms
100ms
DC operation
Operation in this
area is limited by RDS(on).
Ta=25°C
Single pulse
When mounted on ceramic substrate (900mm2×0.8mm)
Drain Current, ID - A
Drain-to-Source Voltage, VDS - V
IT16454

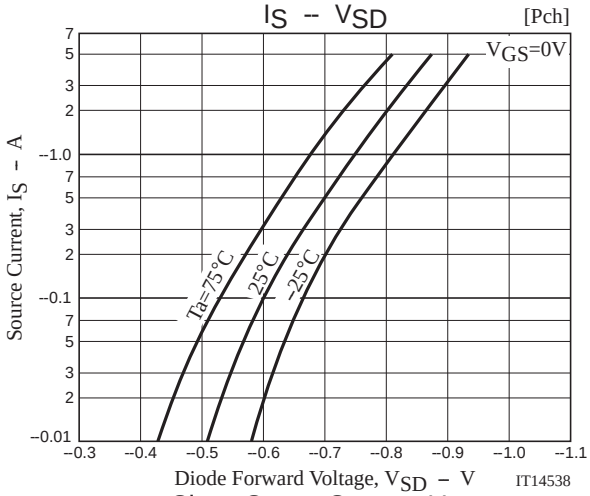

ID -- VDS
[Pch]
-8V
-10V
-4.5V
-3.5V
-2.5V
-1.8V
-1.5V
VGS= -1.2V
Drain Current, ID - A
Drain-to-Source Voltage, VDS - V
IT14533

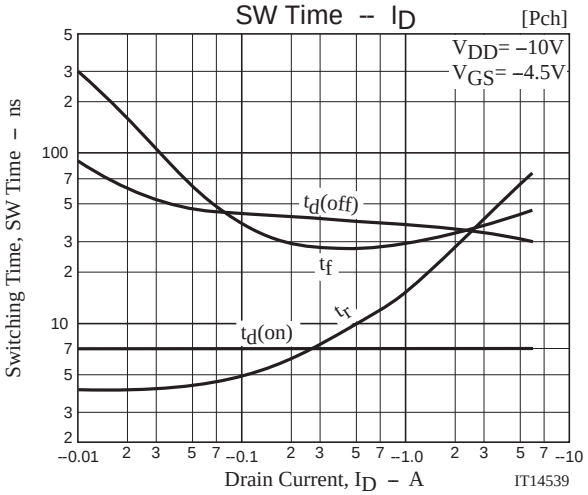

ID -- VGS
[Pch]
VDS= -10V
Ta=75°C
25°C
-25°C
Drain Current, ID - A
Gate-to-Source Voltage, VGS - V
IT14534

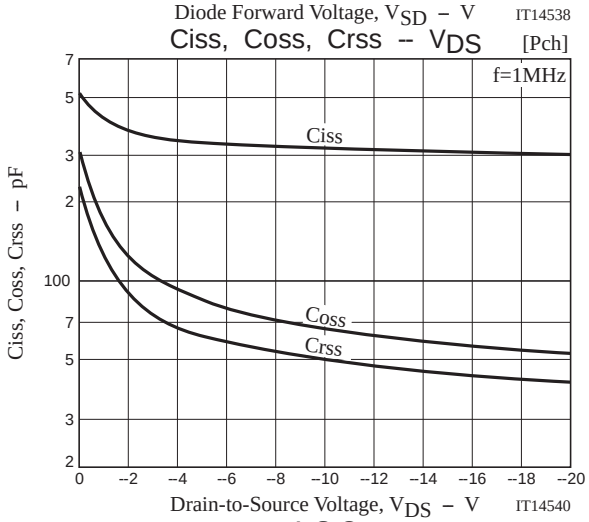

RDS(on) -- VGS
[Pch]
Ta=25°C
ID= –0.5A
–1A
–3A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT14535

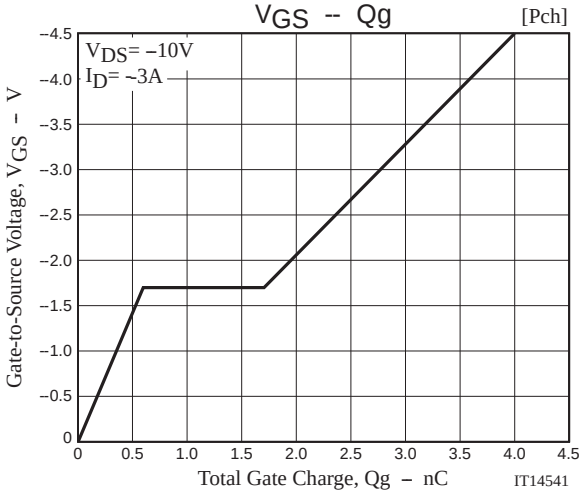

RDS(on) -- Ta
[Pch]
VGS= –1.8V, ID= –0.5A
VGS= –2.5V, ID= –1.0A
VGS= –4.5V, ID= –3.0A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT14536

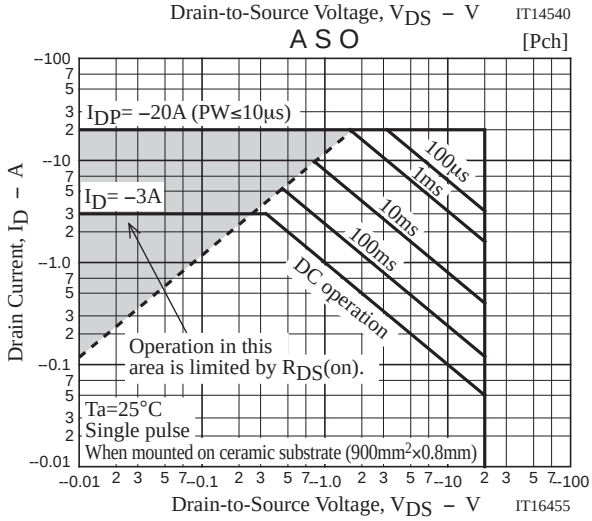

| yfs | -- ID
[Pch]
VDS= –10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT14537

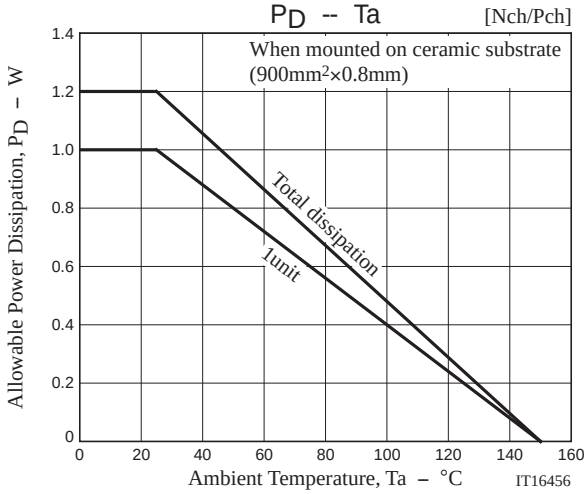

IS -- VSD
[Pch]
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT14538


SW Time -- ID
[Pch]
VDD= –10V
VGS= –4.5V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT14539


Ciss, Coss, Crss -- VDS
[Pch]
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT14540

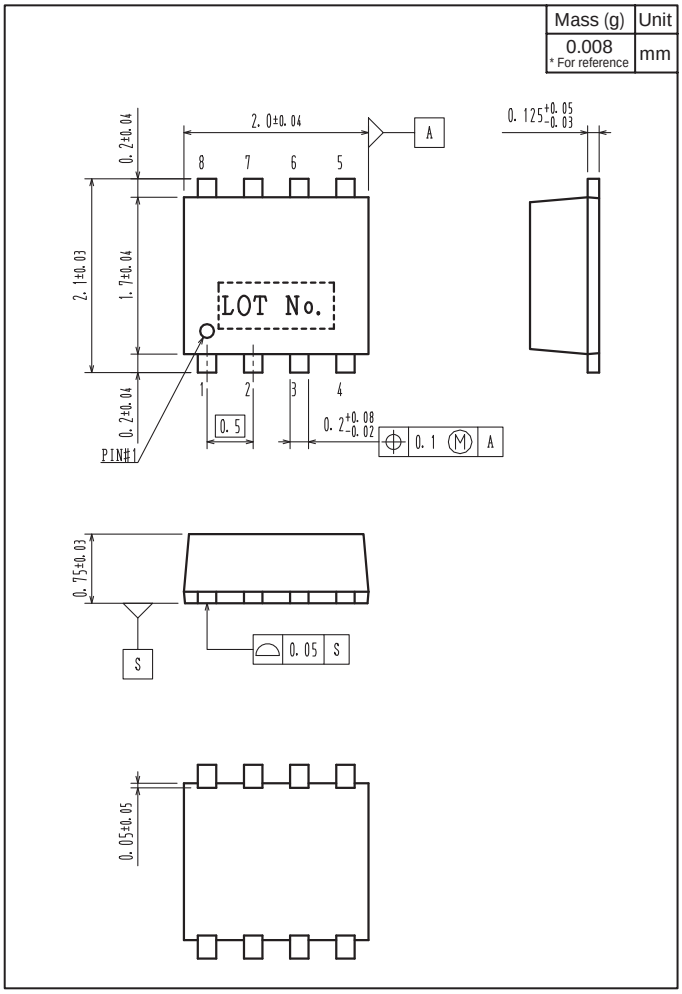

VGS -- Qg
[Pch]
VDS= –10V
ID= –3A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT14541


A S O
[Pch]
IDP= –20A (PW≤10μs)
ID= –3A
100μs
1ms
10ms
100ms
DC operation
Operation in this area is limited by RDS(on).
Ta=25°C
Single pulse
When mounted on ceramic substrate (900mm²×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT16455

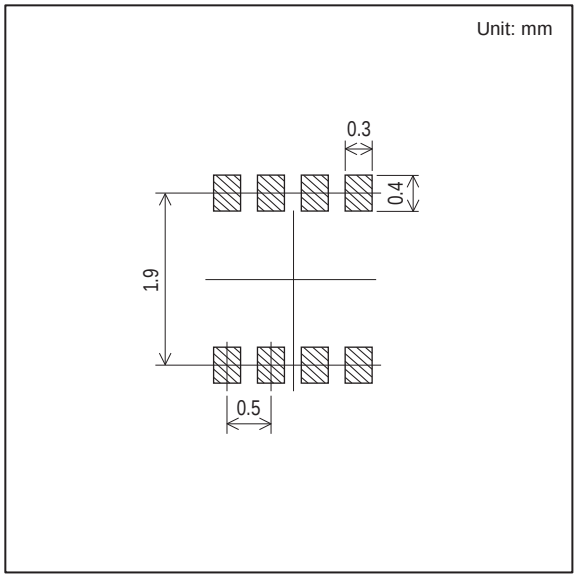

PD -- Ta
[Nch/Pch]
When mounted on ceramic substrate
(900mm2×0.8mm)
Total dissipation
1unit
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT16456
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
0
20
40
60
80
100
120
140
160

Outline Drawing

EMH2604-TL-H



Land Pattern Example



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Parça koduyla arama

Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

www.entegreci.com

Ürün kategorileri

Entegreden kapasitöre tüm elektronik komponent kategorileri.

Kategorilere göz atın

Üreticiler

Aradığınız üreticinin ürünlerini tek sayfada inceleyin.

Üreticileri görün

Toplu alım ve teklif

Listede olmayan ya da yüksek adetli parçalar için teklif isteyin.

Teklif isteyin

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