



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel and P-Channel Silicon MOSFETs

VEC2616 — General-Purpose Switching Device Applications

Features

- ON-resistance Nch: $R_{DS(on)1}=62\text{m}\Omega(\text{typ.})$, Pch: $R_{DS(on)1}=105\text{m}\Omega(\text{typ.})$
- 4V drive
- N-channel MOSFET + P-channel MOSFET
- Halogen free compliance
- Protection diode in

Specifications

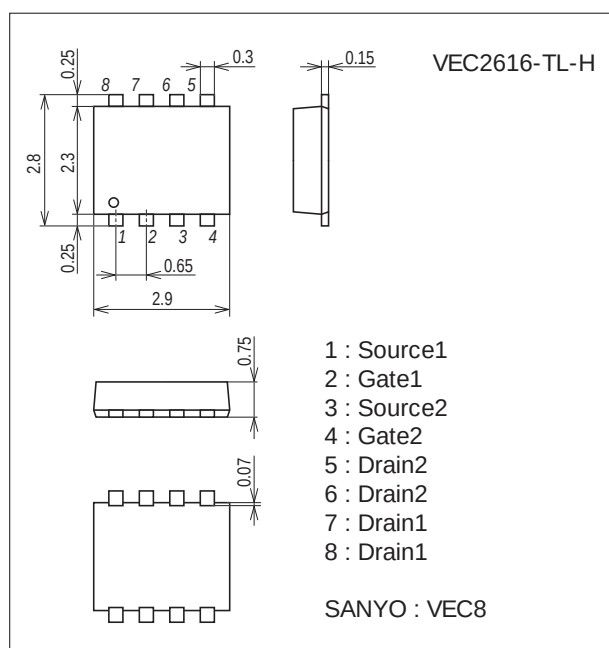
Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V_{DS}		60	-60	V
Gate-to-Source Voltage	V_{GS}		± 20	± 20	V
Drain Current (DC)	I_D		3	-2.5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	12	-10	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate ($900\text{mm}^2 \times 0.8\text{mm}$) 1unit	0.9		W
Total Dissipation	P_T	When mounted on ceramic substrate ($900\text{mm}^2 \times 0.8\text{mm}$)	1.0		W
Channel Temperature	T_{ch}		150		$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150		$^\circ\text{C}$

Package Dimensions

unit : mm (typ)

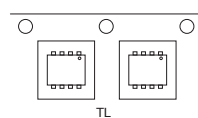
7012-002



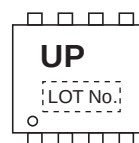
Product & Package Information

- Package : VEC8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

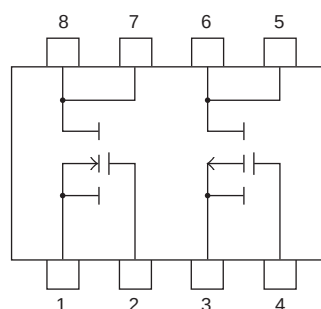
Packing Type : TL



Marking



Electrical Connection



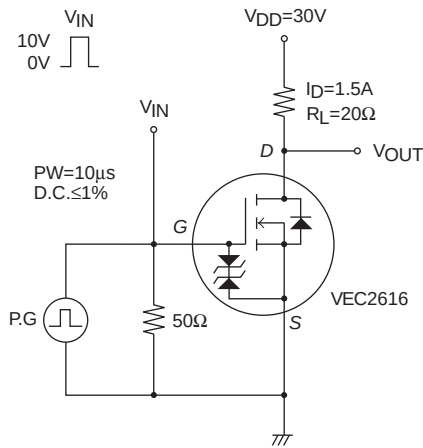
VEC2616

Electrical Characteristics at Ta=25°C

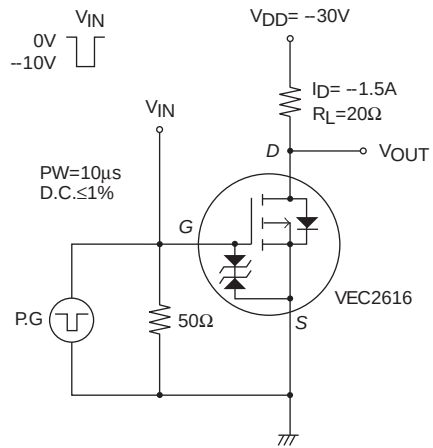
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0V$	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V, V_{DS}=0V$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=1.5A$		2.6		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=1.5A, V_{GS}=10V$		62	80	$m\Omega$
	$R_{DS(on)2}$	$I_D=0.75A, V_{GS}=4.5V$		76	106	$m\Omega$
	$R_{DS(on)3}$	$I_D=0.75A, V_{GS}=4V$		83	116	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=20V, f=1MHz$		505		pF
Output Capacitance	C_{oss}			57		pF
Reverse Transfer Capacitance	C_{rss}			37		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		7.3		ns
Rise Time	t_r			7.5		ns
Turn-OFF Delay Time	$t_d(off)$			41		ns
Fall Time	t_f			22		ns
Total Gate Charge	Q_g	$V_{DS}=30V, V_{GS}=10V, I_D=3A$		10		nC
Gate-to-Source Charge	Q_{gs}			1.6		nC
Gate-to-Drain “Miller” Charge	Q_{gd}			2.1		nC
Diode Forward Voltage	V_{SD}	$I_S=3A, V_{GS}=0V$		0.81	1.2	V
[P-channel]						
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}	$V_{GS}=\pm 16V, V_{DS}=0V$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-1.5A$		3.9		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-1.5A, V_{GS}=-10V$		105	137	$m\Omega$
	$R_{DS(on)2}$	$I_D=-0.75A, V_{GS}=-4.5V$		128	180	$m\Omega$
	$R_{DS(on)3}$	$I_D=-0.75A, V_{GS}=-4V$		138	194	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=-20V, f=1MHz$		420		pF
Output Capacitance	C_{oss}			54		pF
Reverse Transfer Capacitance	C_{rss}			44		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		6.4		ns
Rise Time	t_r			9.8		ns
Turn-OFF Delay Time	$t_d(off)$			65		ns
Fall Time	t_f			36		ns
Total Gate Charge	Q_g	$V_{DS}=-30V, V_{GS}=-10V, I_D=-2.5A$		11		nC
Gate-to-Source Charge	Q_{gs}			1.4		nC
Gate-to-Drain “Miller” Charge	Q_{gd}			2		nC
Diode Forward Voltage	V_{SD}	$I_S=-2.5A, V_{GS}=0V$		-0.83	-1.2	V

Switching Time Test Circuit

[N-channel]

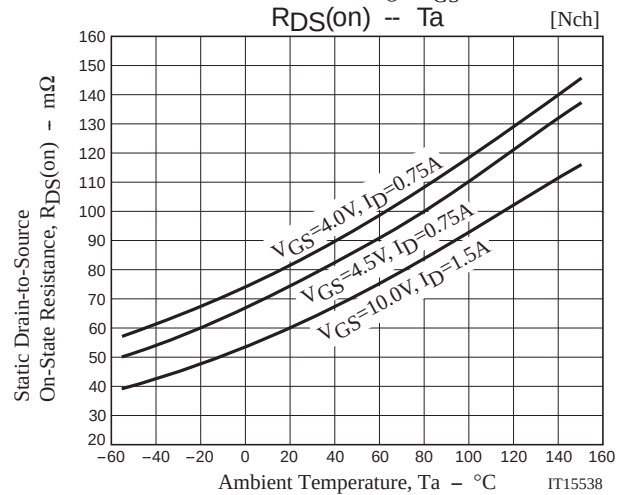
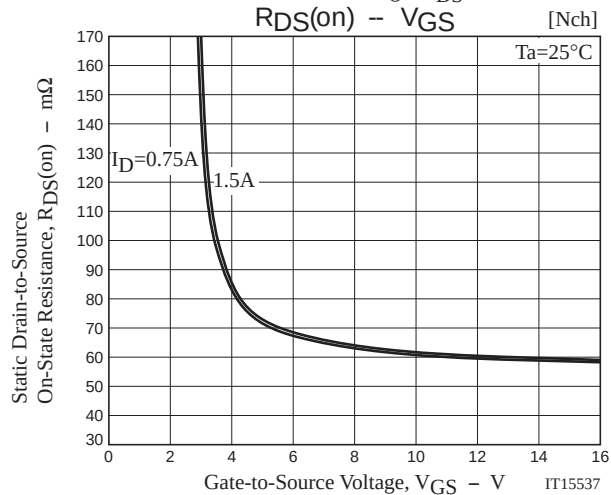
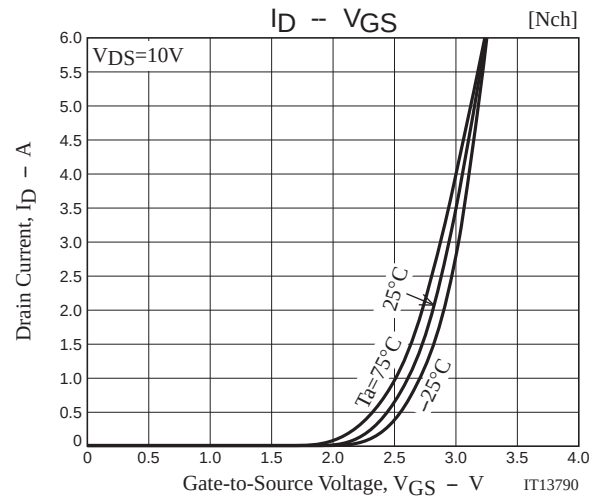
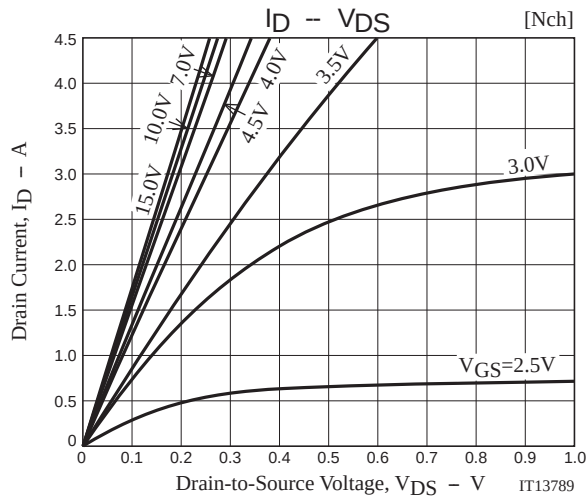


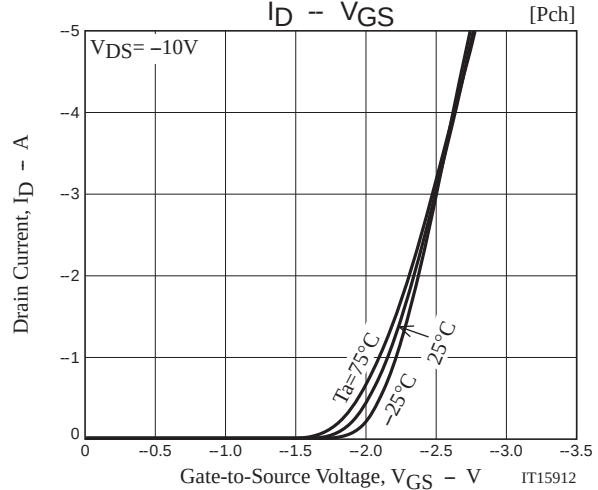
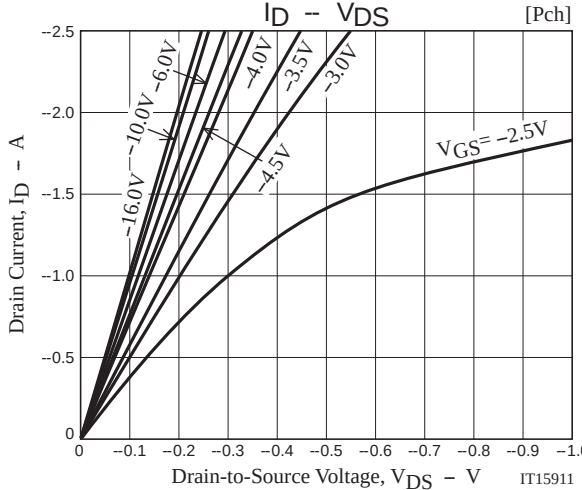
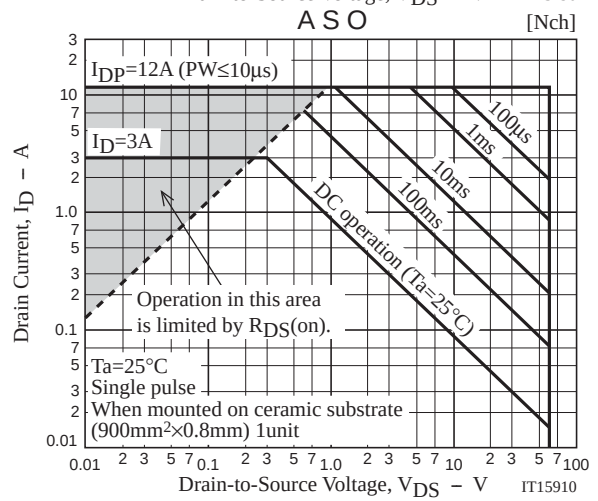
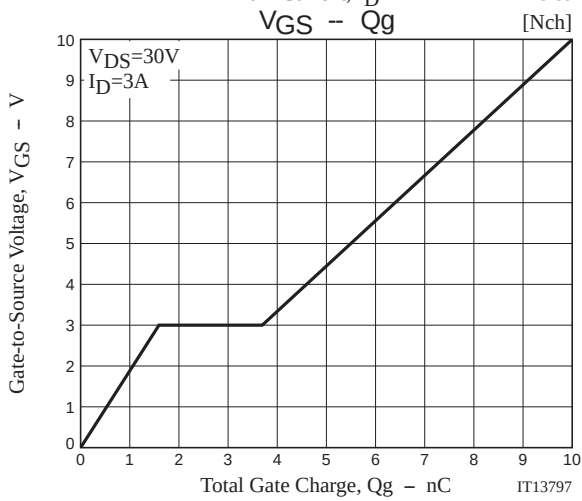
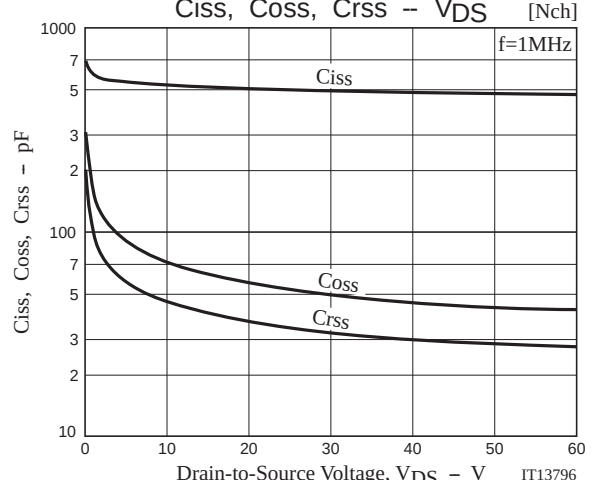
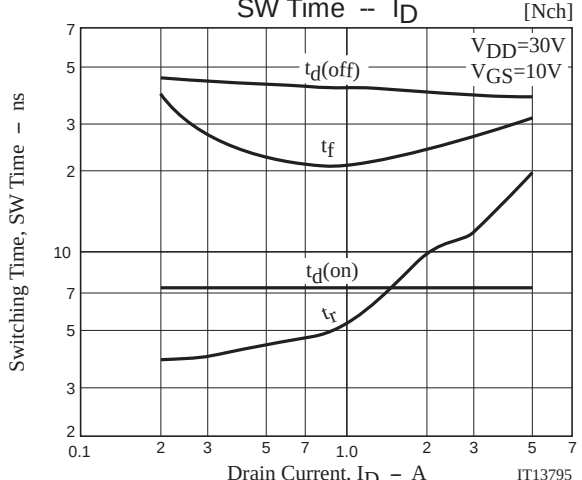
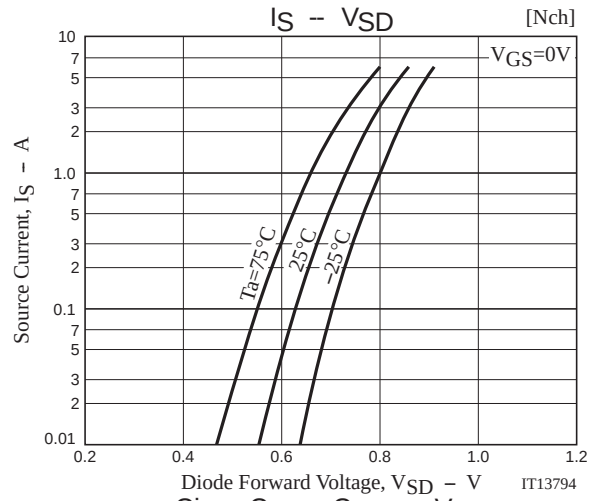
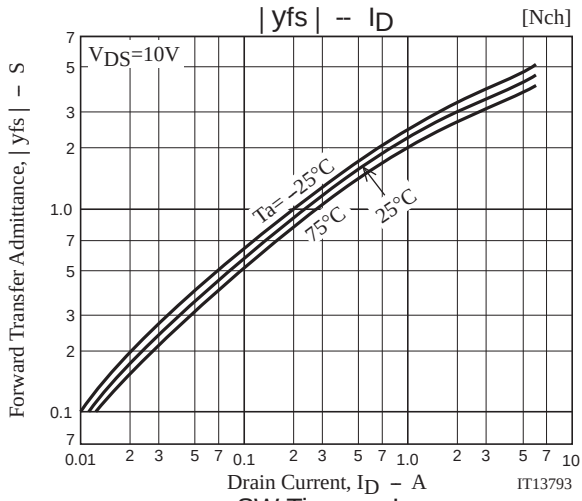
[P-channel]

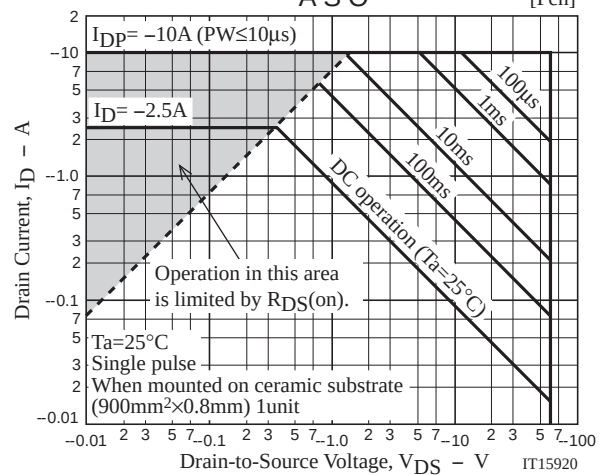
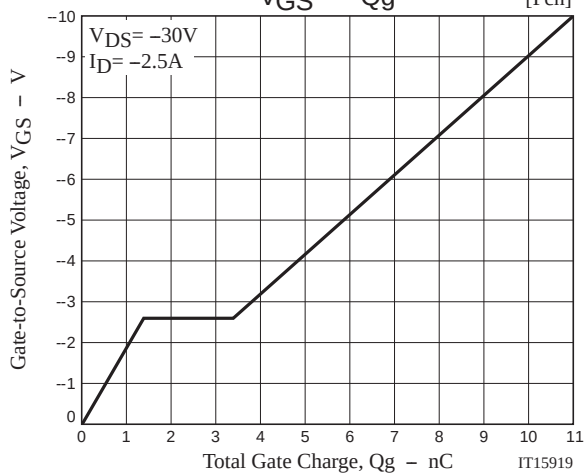
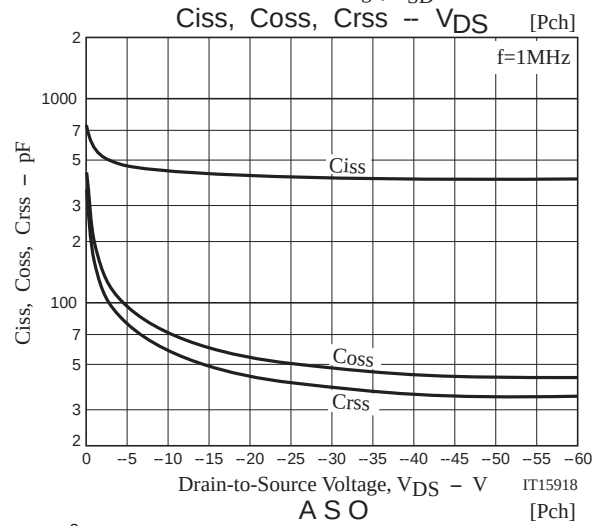
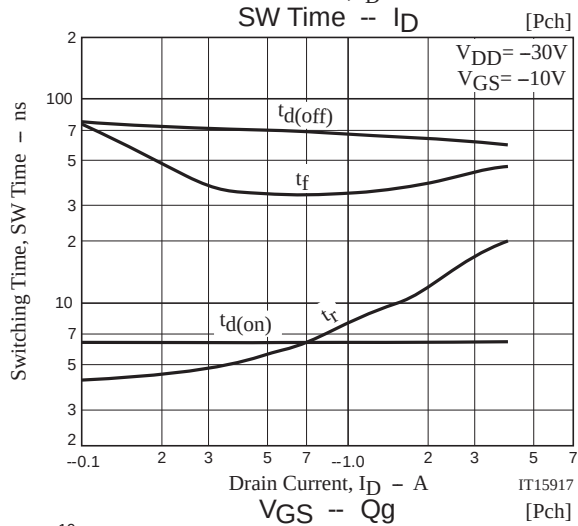
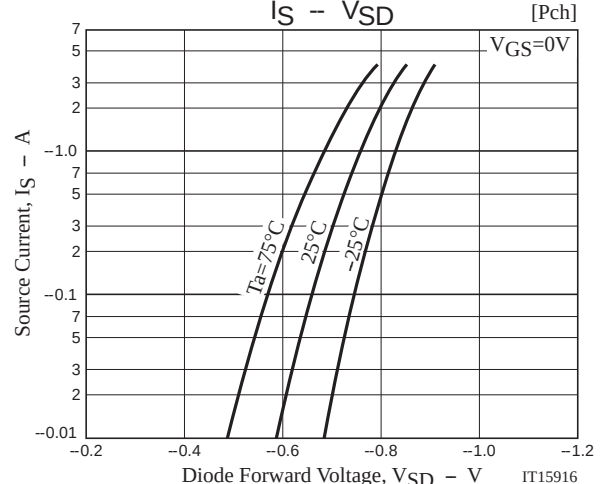
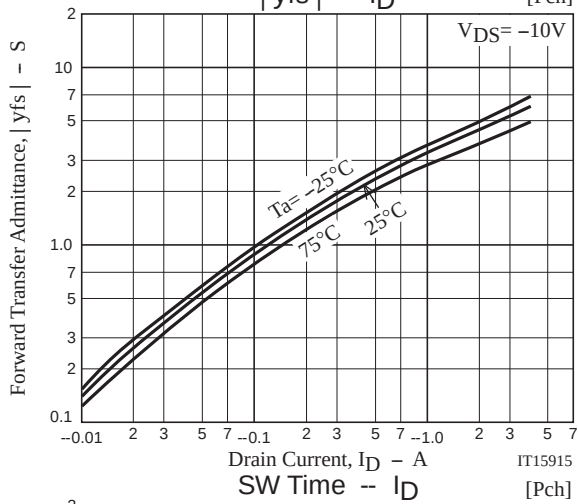
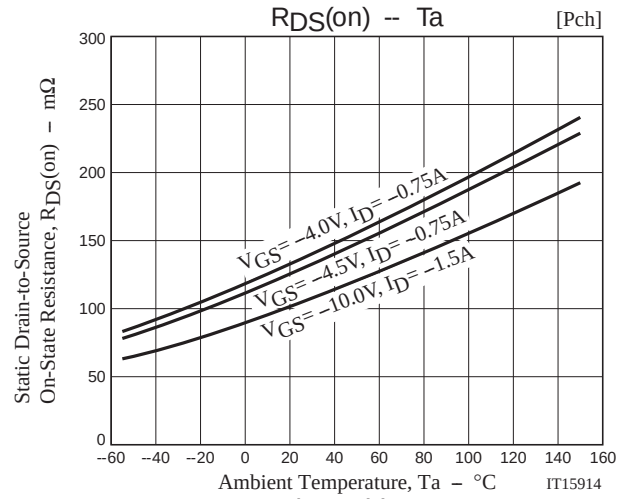
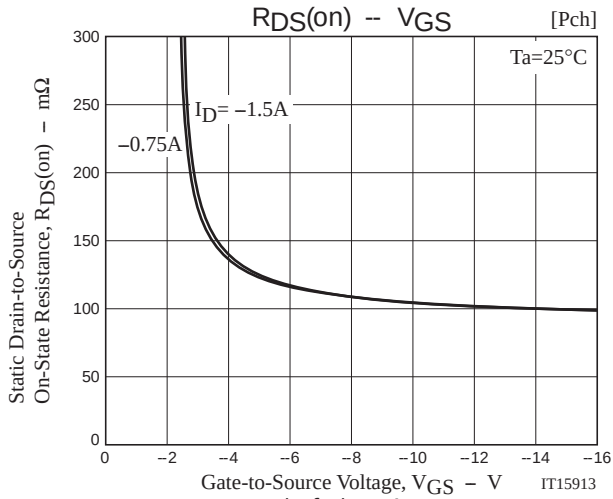


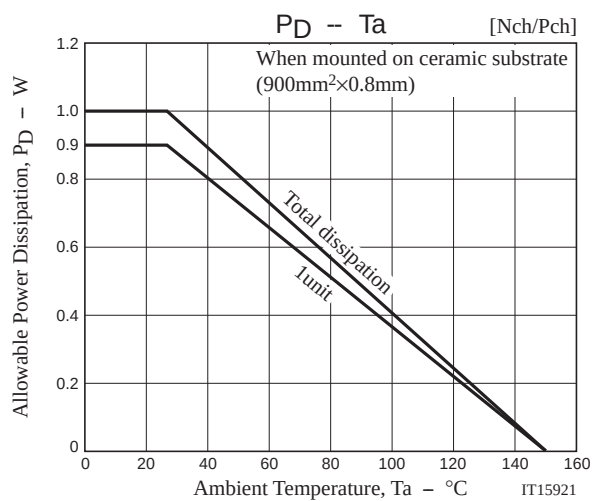
Ordering Information

Device	Package	Shipping	memo
VEC2616-TL-H	VEC8	3,000pcs./reel	Pb Free and Halogen Free









Taping Specification

VEC2616-TL-H

1. Packing Format

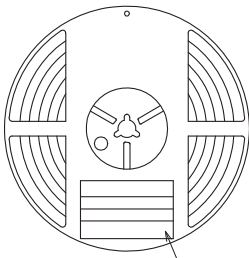
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
VEC8	CPH6	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Reel label, Inner box label
(unit:mm)

Outer box label

It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.

Packing method



Reel label

Type No.
LOT No.
Quantity
Origin

69	(P) TYPE 000000000
	(17) LOT 00
	(Q) QTY 0,000 (1) LEAD FREE *
	(S) SPECIAL
	Z0722005310C
	ASSEMBLY:**** (DIFFUSION:****)

108	TYPE CODE
	000000000000
	TYPE 00000000
	QTY 0,000 PCS (1) LEAD FREE *
	LOT 00000000
	PACKAGE 00000000
	SPECIAL
	Z0722005310C
	ASSEMBLY:**** (DIFFUSION:****)

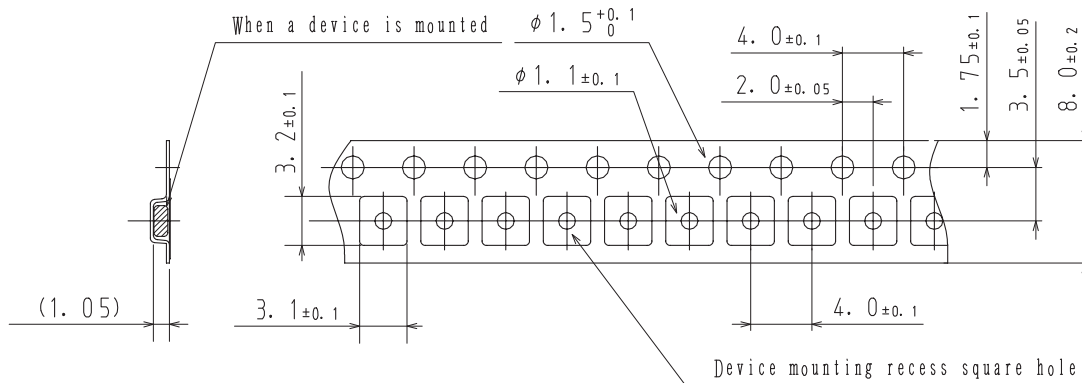
NOTE (1)

The LEAD FREE * description shows that the surface treatment of the terminal is lead free.

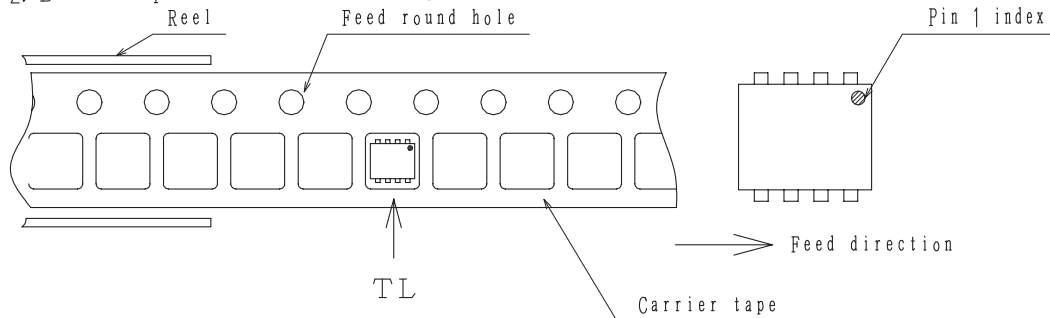
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)

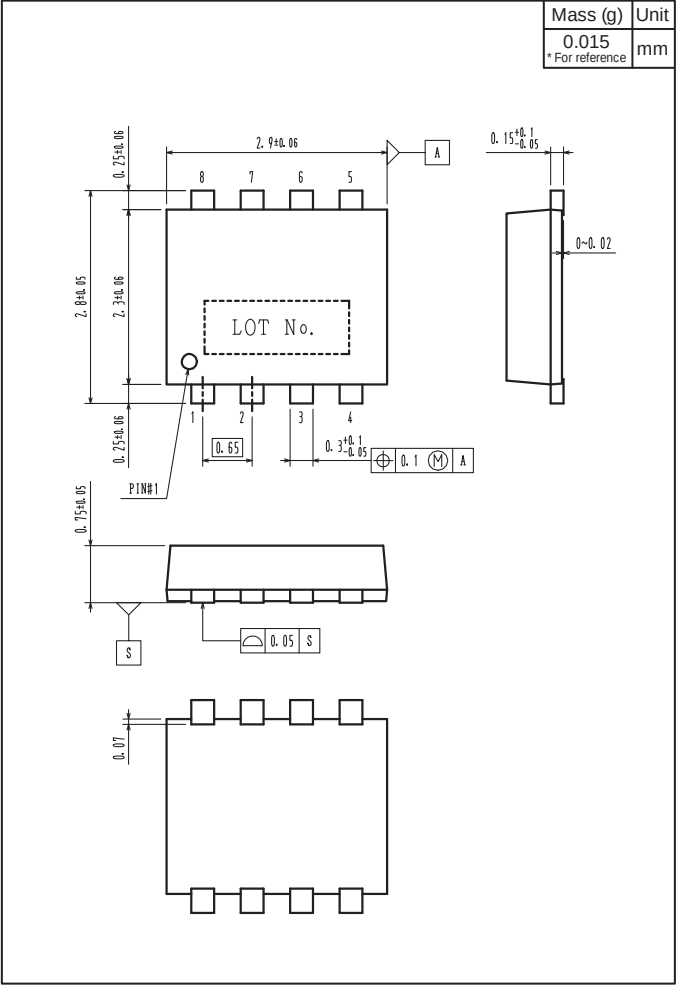


2-2. Device placement direction

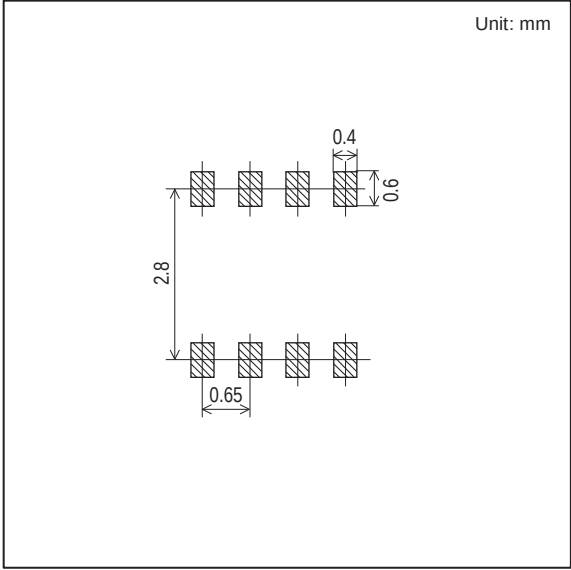


Those with oen electrode terminal on the feed hole side.....TL

Outline Drawing
VEC2616-TL-H



Land Pattern Example



Note on usage : Since the VEC2616 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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