



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

Specifications

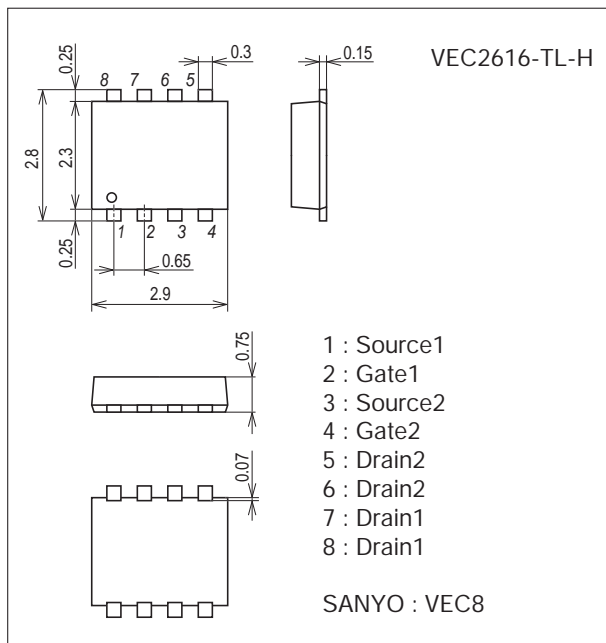
Absolute Maximum Ratings at $T_a=25^\circ C$

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

Package Dimensions

unit : mm (typ)

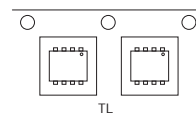
7012-002



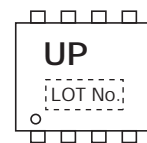
Product & Package Information

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

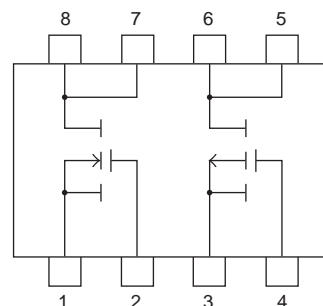
Packing Type : TL



Marking



Electrical Connection



VEC2616

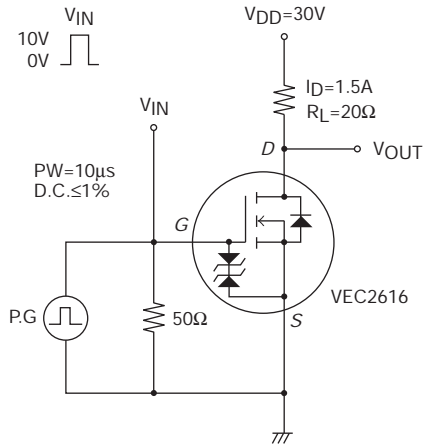
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	60			V
Zero-Gate Voltage Drain Current	IDSS	VDS=60V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transfer Admittance	yfs	VDS=10V, ID=1.5A		2.6		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=1.5A, VGS=10V		62	80	mΩ
	RDS(on)2	ID=0.75A, VGS=4.5V		76	106	mΩ
	RDS(on)3	ID=0.75A, VGS=4V		83	116	mΩ
Input Capacitance	Ciss	VDS=20V, f=1MHz		505		pF
Output Capacitance	Coss			57		pF
Reverse Transfer Capacitance	Crss			37		pF
Turn-ON Delay Time	td(on)		See specified Test Circuit.		7.3	
Rise Time	tr			7.5		ns
Turn-OFF Delay Time	td(off)			41		ns
Fall Time	tf			22		ns
Total Gate Charge	Qg	VDS=30V, VGS=10V, ID=3A			10	
Gate-to-Source Charge	Qgs			1.6		nC
Gate-to-Drain "Miller" Charge	Qgd			2.1		nC
Diode Forward Voltage	VSD	IS=3A, VGS=0V		0.81	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0V	-60			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-60V, VGS=0V			-1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=-10V, ID=-1mA	-1.2		-2.6	V
Forward Transfer Admittance	yfs	VDS=-10V, ID=-1.5A		3.9		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=-1.5A, VGS=-10V		105	137	mΩ
	RDS(on)2	ID=-0.75A, VGS=-4.5V		128	180	mΩ
	RDS(on)3	ID=-0.75A, VGS=-4V		138	194	mΩ
Input Capacitance	Ciss	VDS=-20V, f=1MHz		420		pF
Output Capacitance	Coss			54		pF
Reverse Transfer Capacitance	Crss			44		pF
Turn-ON Delay Time	td(on)		See specified Test Circuit.		6.4	
Rise Time	tr			9.8		ns
Turn-OFF Delay Time	td(off)			65		ns
Fall Time	tf			36		ns
Total Gate Charge	Qg	VDS=-30V, VGS=-10V, ID=-2.5A			11	
Gate-to-Source Charge	Qgs			1.4		nC
Gate-to-Drain "Miller" Charge	Qgd			2		nC
Diode Forward Voltage	VSD	IS=-2.5A, VGS=0V		-0.83	-1.2	V

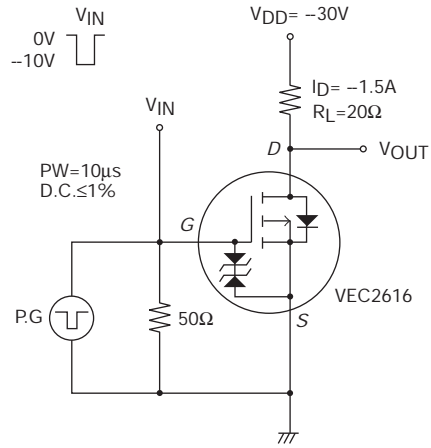
VEC2616

Switching Time Test Circuit

[N-channel]

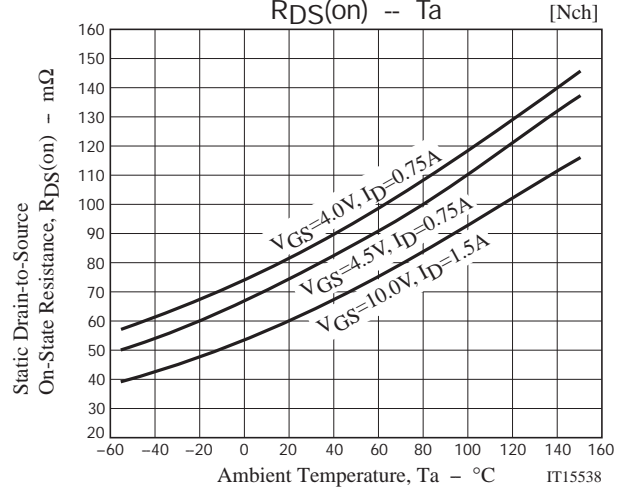
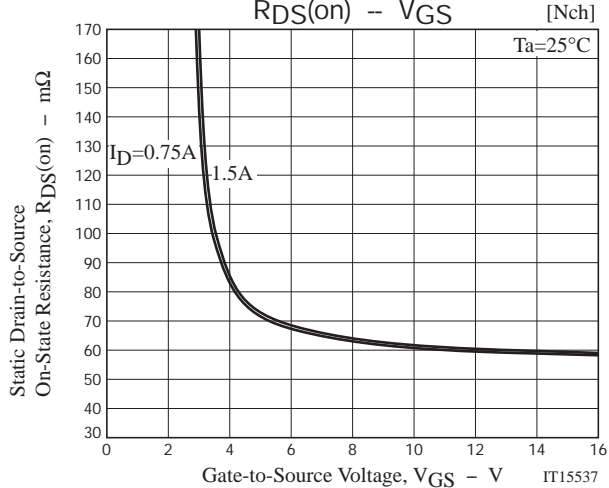
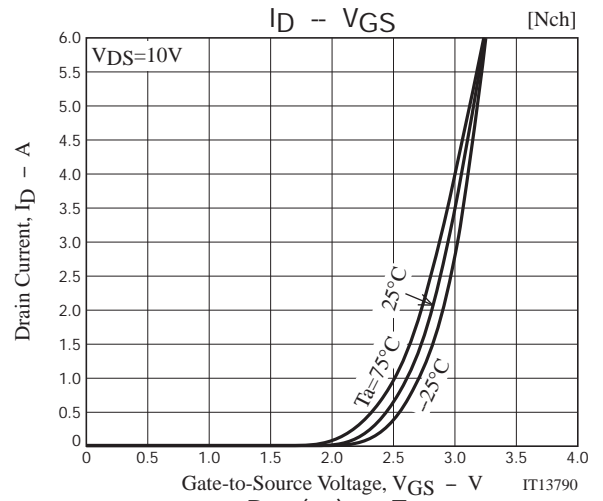
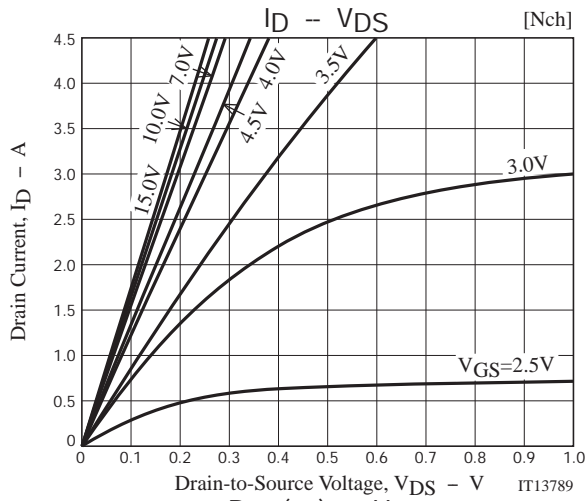


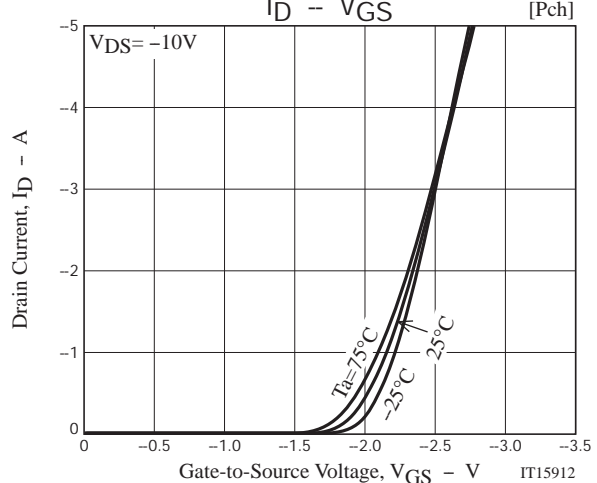
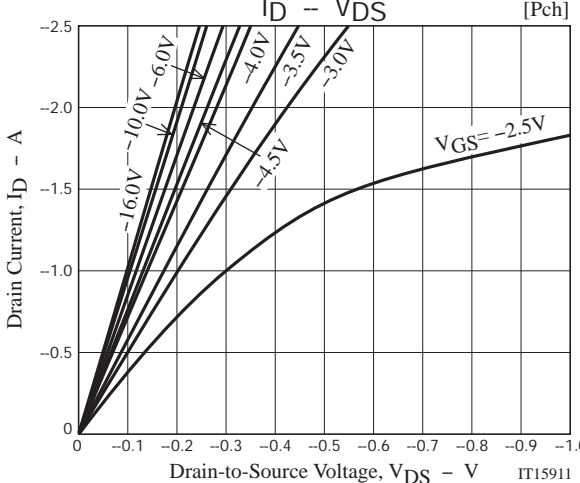
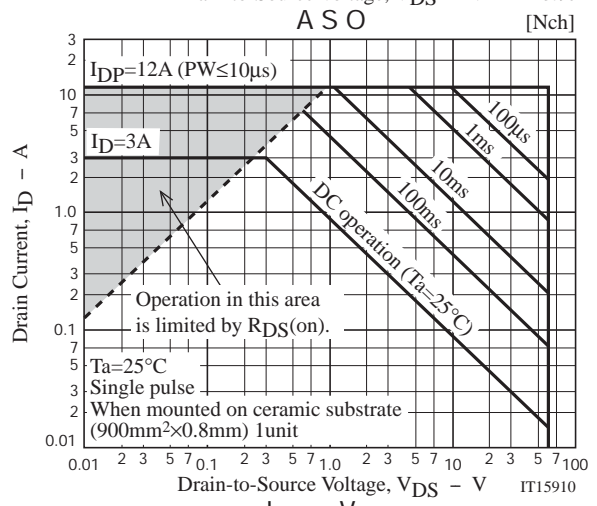
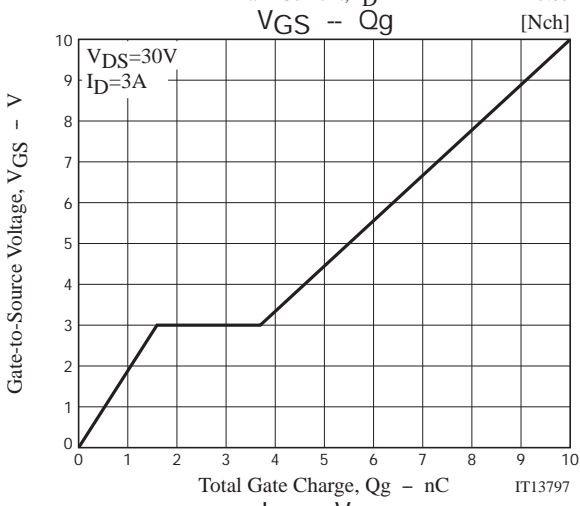
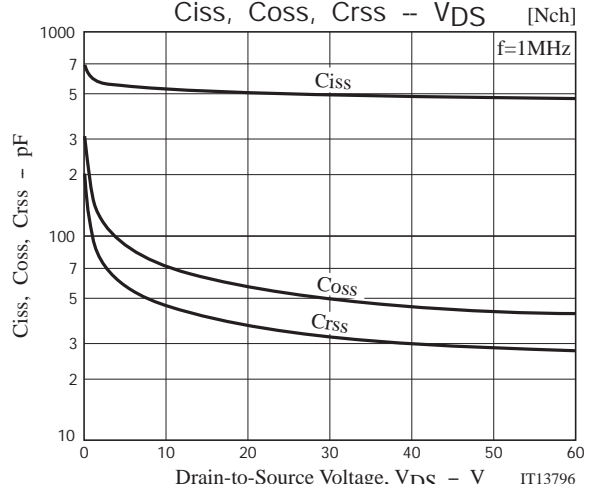
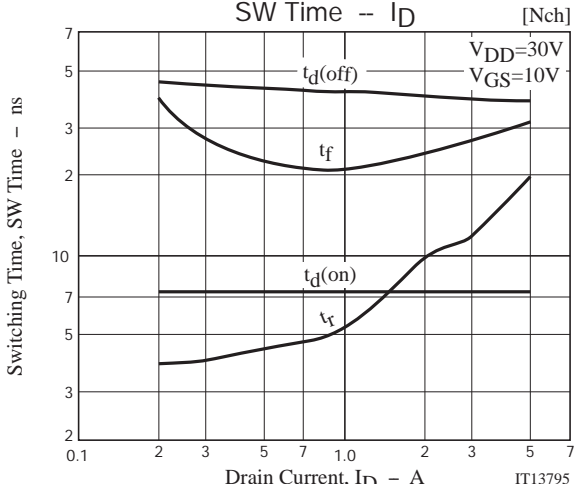
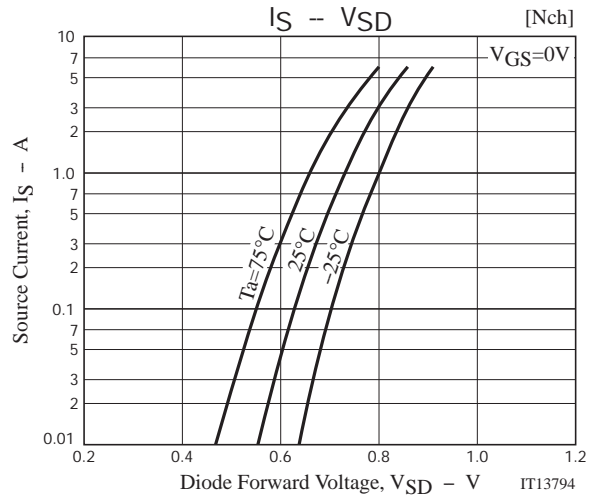
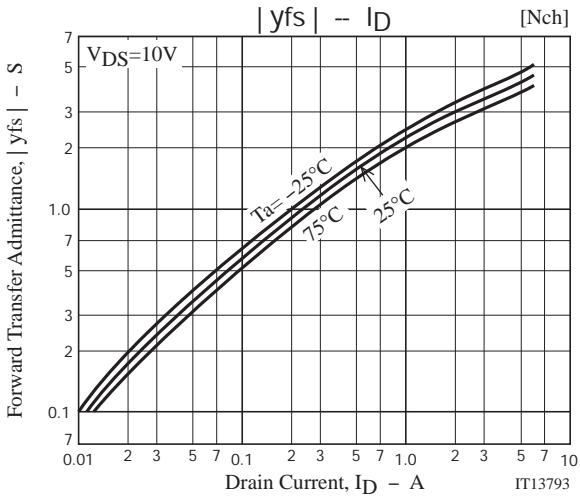
[P-channel]

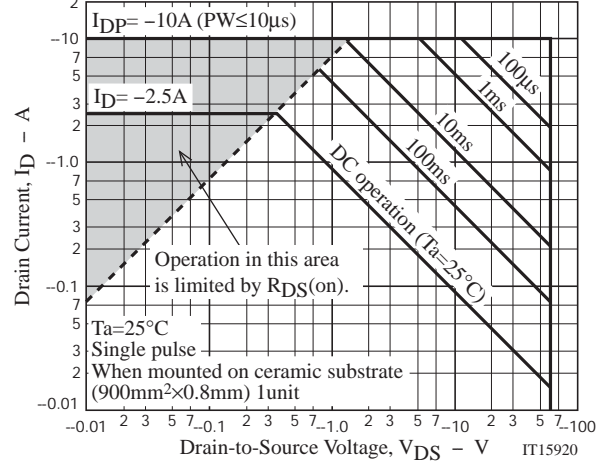
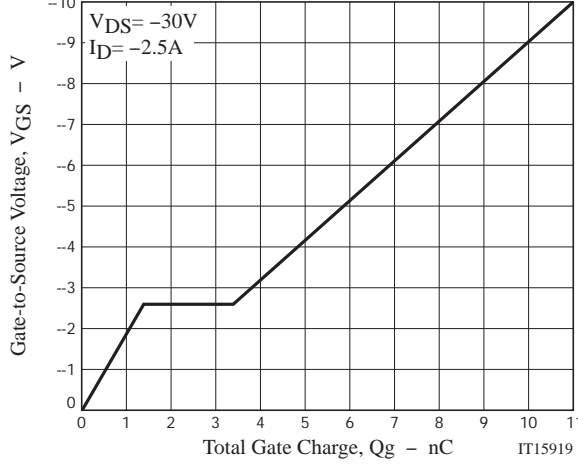
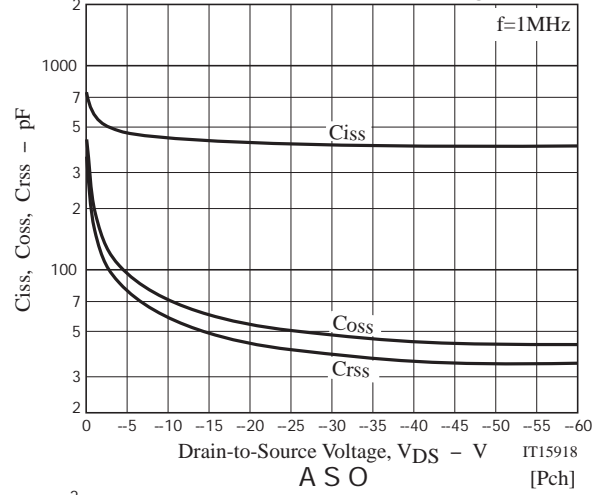
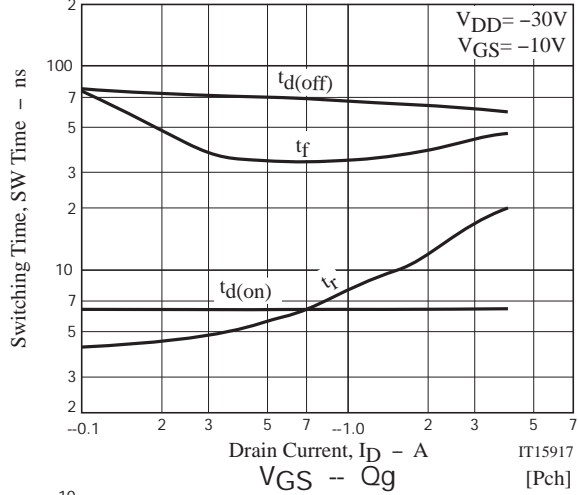
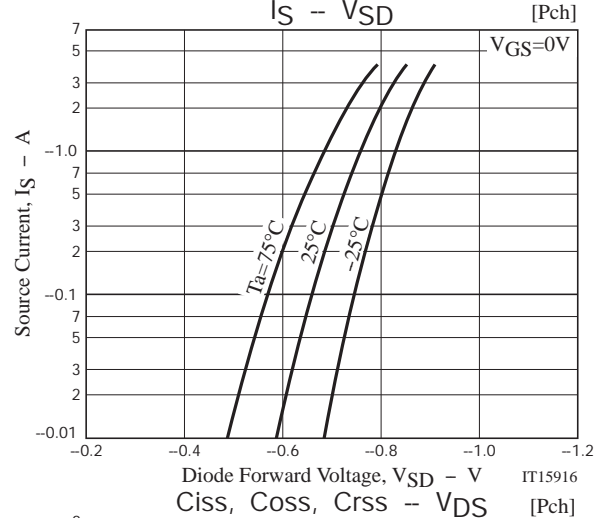
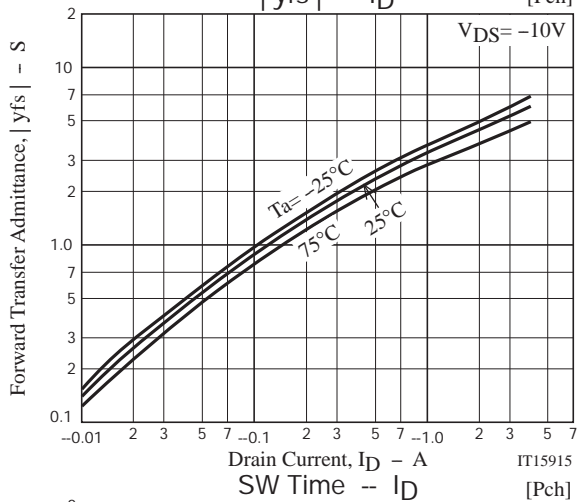
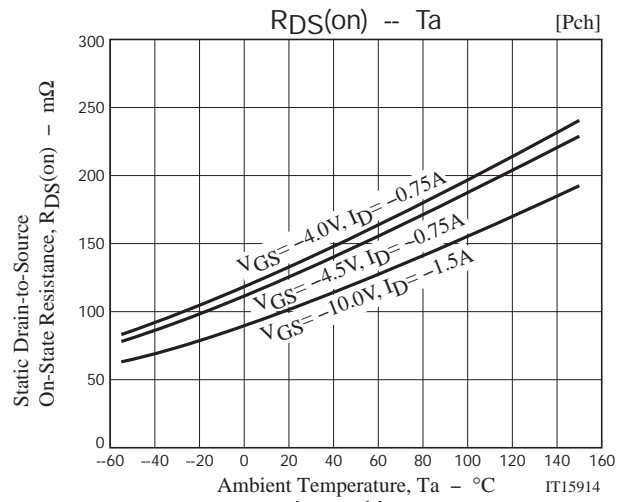
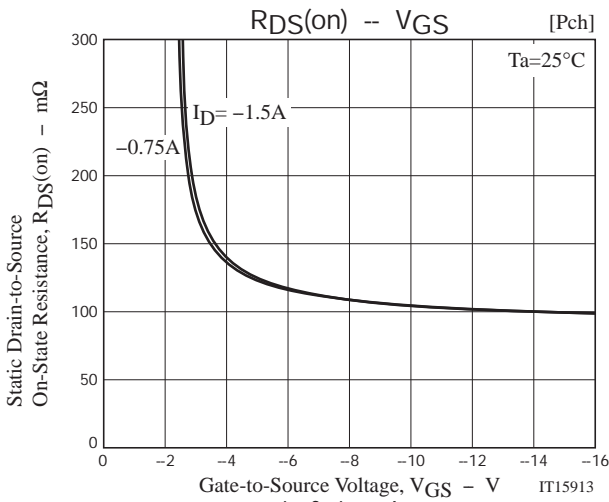


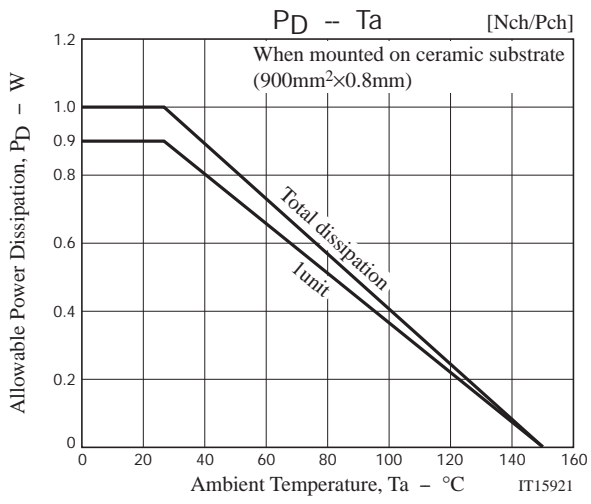
Ordering Information

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









Taping Specification

VEC2616-TL-H

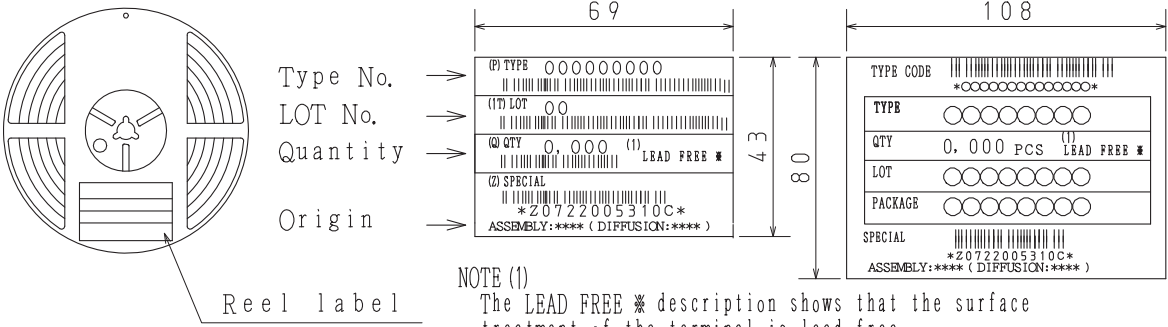
1. Packing Format

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

Packing method

Reel label, Inner box label (unit:mm) Outer box label

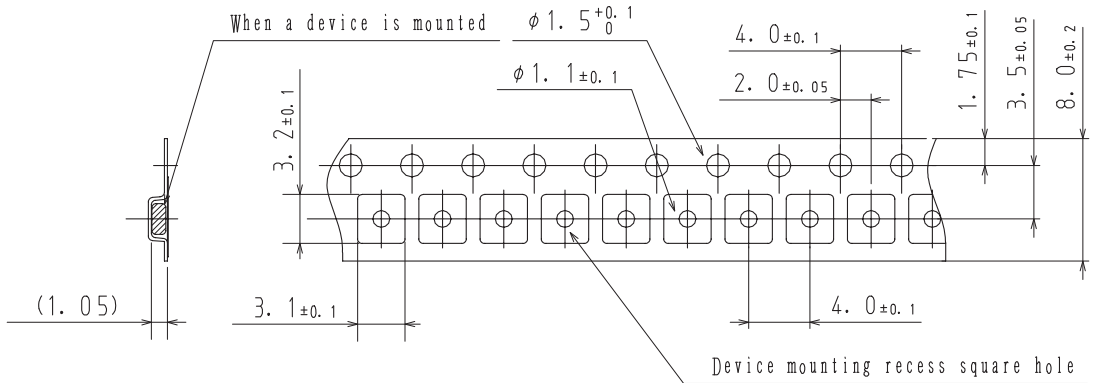
It is a label at the time of factory shipments. The form of a label may change in physical distribution process.



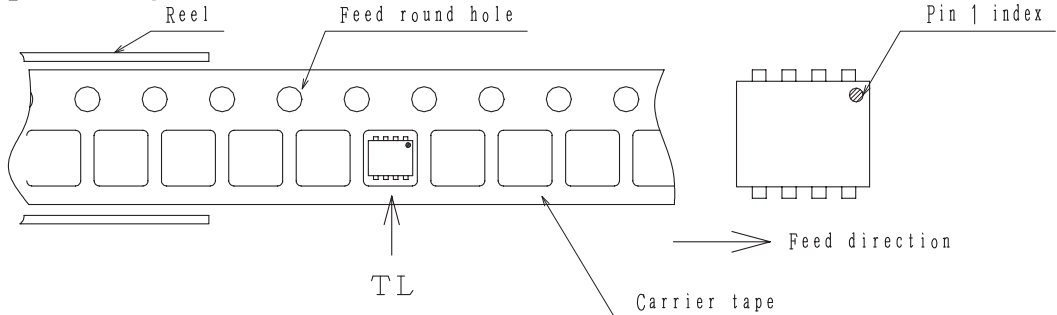
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



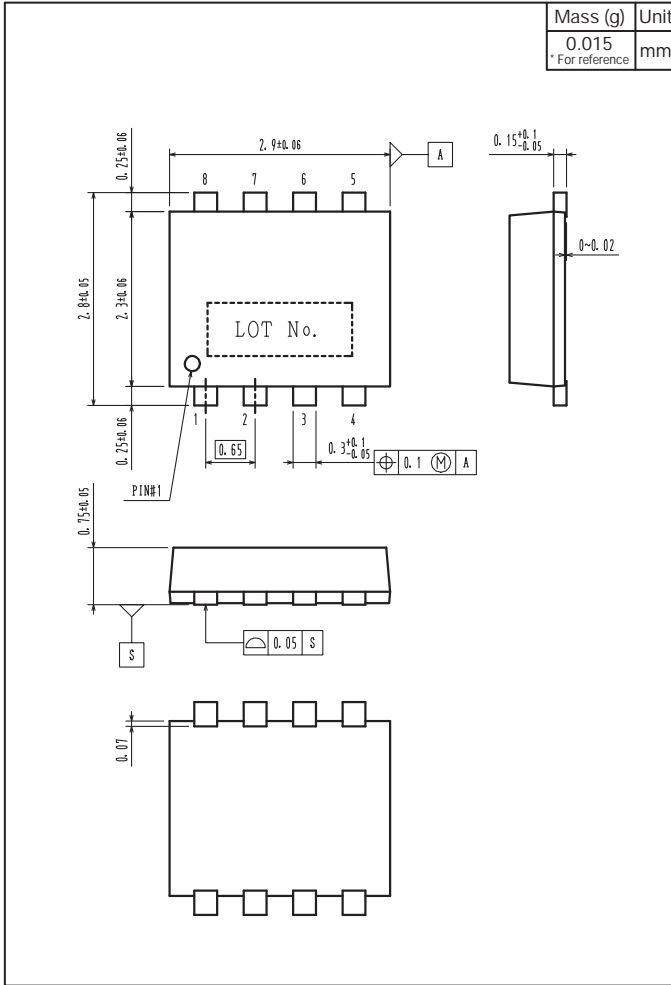
2-2. Device placement direction



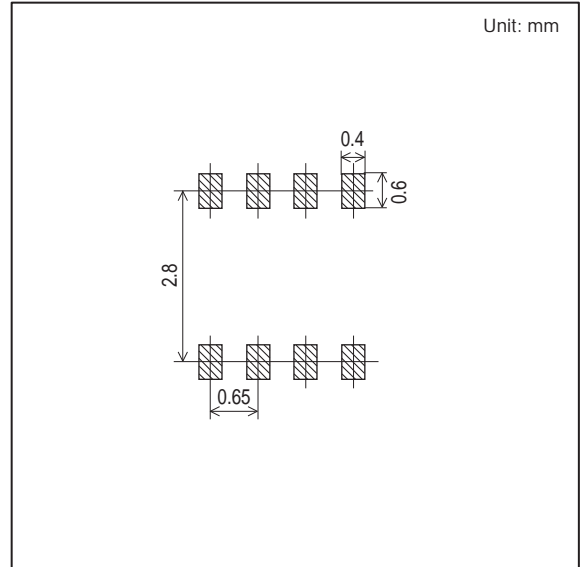
Those with oen electrode terminal on the feed hole side.....TL

VEC2616

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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